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January-December 1997

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Note

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Abbreviations

ASEAN	Association of South-East Asian Nations
ECLAC	Economic Commission for Latin America and the Caribbean
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GEMS/WATER	Global Environmental Monitoring System Water Quality Monitoring Programme
ILO	International Labour Organization
IMF	International Monetary Fund
INFOODS	International Network of Food Data Systems
PLEC	People, Land Management and Environmental Change
TERI	Tata Energy Research Institute
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
UNU/BIOLAC	UNU Programme for Biotechnology in Latin America and the Caribbean
UNU/IAS	UNU Institute of Advanced Studies
UNU/IIST	UNU International Institute for Software Technology
UNU/ILA	UNU International Leadership Academy
UNU/INRA	UNU Institute for Natural Resources in Africa
UNU/INTECH	UNU Institute for New Technologies
UNU/INWEH	UNU International Network on Water, Environment and Health
UNU/WIDER	UNU World Institute for Development Economics Research
WHO	World Health Organization
ZERI	Zero Emissions Research Initiative

Chapter I
The focal point of the United Nations University: finding solutions to pressing global problems – an overview

1. The year 1997 marked the twenty-second year of scholarly work for the United Nations University (UNU). For over two decades, the University has played an important role in stimulating international academic cooperation through innovative research initiatives and capacity-building programmes, and by disseminating the results of this work.

2. The Council of the University, its governing body, held its forty-fourth session at UNU headquarters in Tokyo from 1 to 5 December 1997. The deliberations focused on three main topics: a review of the academic activities conducted during 1997; the University's proposed academic programme and budget for 1998-1999; and an assessment report on the University prepared by the Rector.

3. The basic framework for the University's work during the year was its third Medium-Term Perspective, which is meant to guide the academic and institutional development of the University's activities during 1997-2001. It calls for the University to find solutions to pressing global problems within four programme areas, namely, environment; science and technology; development; and peace and governance.

4. The present report has three objectives. First, it highlights some of the University's global activities within each of the four programme areas. Second, it describes UNU efforts in 1997 in postgraduate training, dissemination of research findings and institutional development. Third, it shows how the work of UNU was conducted in cooperation with other United Nations organizations.

5. As in the past, this report does not provide an exhaustive account of all the academic work of UNU. Instead, it highlights for 1997 the University's main initiatives and work areas. It provides a brief look at the work being coordinated and done by a decentralized network of scholars working at UNU headquarters in Tokyo and at its eight research and training centres and programmes around the world, namely:

The World Institute for Development Economics Research (UNU/WIDER) in Helsinki;

The Institute for New Technologies (UNU/INTECH) in Maastricht, the Netherlands;

The International Institute for Software Technology (UNU/IIST) in Macau;

The Institute of Advanced Studies (UNU/IAS) in Tokyo;

The Institute for Natural Resources in Africa (UNU/INRA) in Accra;

The Programme for Biotechnology in Latin America and the Caribbean (UNU/BIOLAC) in Caracas;

The International Network on Water, Environment and Health (UNU/INWEH) in Hamilton, Canada;

The International Leadership Academy (UNU/ILA) in Amman.

6. Numerous cooperating institutions throughout the world collaborated with UNU and are cited in the context of their specific roles within the University's programme areas.

Chapter II
The work of the University: issues and challenges

A. Environment

7. The University's environment programme focuses on interaction between human activities and the natural environment. Its work is divided into four areas:

(a) **Sustainable resource management.** The key concepts in this programme are sustainable use of land and water resources, and the vulnerability of ecosystems to human-induced and natural environmental changes. The programme is also concerned with effective environmental monitoring and governance. This work is coordinated at the UNU Centre (at headquarters in Tokyo) and implemented through extensive worldwide networks;

(b) **Eco-restructuring for sustainable development.** Most of the world's environmental problems are caused by a failure or inadequacy of current development processes. Several of the University's research activities are finding better ways of managing those processes, ensuring that they are sustainable and that they revitalize growth. These activities are being carried out primarily by UNU/IAS in Tokyo;

(c) **Natural resources in Africa.** The Institute for Natural Resources in Africa (UNU/INRA) is addressing the continent's urgent needs for human resource development and institutional capacity-building. Its main goals are to help

African countries find sustainable ways of using their natural resources and to help Africans become self-sufficient in the production of food. The headquarters of UNU/INRA is located at the Legon campus of the University of Ghana, near Accra. It also has a Mineral Resources Unit in Lusaka, at the School of Mines of the University of Zambia;

(d) **Water, environment and health.** The International Network on Water, Environment and Health (UNU/INWEH) in Canada is integrating international expertise into a programme of education, training, research and technology transfer on water, environment and human health issues. Its work is project-based, and researchers proactively respond to global water problems with innovative solutions. The work of UNU/INWEH is being carried out through networks and project teams around the world.

Sustainable resource management

8. The University has a large project on People, Land Management and Environmental Change (UNU/PLEC). UNU/PLEC is a demonstration and capacity-building project concerned with conserving biological diversity in managed agricultural ecosystems. In 1997, the project attracted US$ 6.17 million in funding from the Global Environment Facility (GEF).

9. It is recognized that most of the world's plant biodiversity lies in cultivated and semi-cultivated lands in the tropics and subtropics – an area many times larger than can be effectively protected through government controls. During the last 50 years, however, significant numbers of cultivated plant varieties and landraces have disappeared because of the commercialization and mechanization of agriculture. In contrast, many of the areas where diverse plant species and genetic varieties still exist are managed by farmers and pastoralists whose systems share several common characteristics: diversity in cropping and cultivation, micro-level adaptations, successional vegetation and small-scale farming. Even as populations grew and markets expanded, indigenous knowledge systems were applied in farms which combined commercial and intensive production with adaptive techniques, such as integrated pest management and organic methods for maintaining soil fertility and land quality.

10. There is a need to document these approaches systematically and to evaluate their viability in the light of the pressing demand for increased food production. It is necessary to determine the range of conservation strategies to be used and provide appropriate support to communities in agro-ecosystems where biodiversity is at risk.

11. UNU/PLEC aims to focus on agricultural lands located in priority ecosystems that are managed by farmers and pastoralists. These are lands that are at the margins of forests, semi-arid regions, mountains, wetlands and land corridors.

12. UNU/PLEC works through locally based clusters in six areas: West Africa (Ghana and Guinea); East Africa (Kenya, Uganda and the United Republic of Tanzania); South-East Asia (Yunnan Province, China, and northern Thailand); Papua New Guinea; meso-America (Jamaica and Mexico); and Amazonia (Brazil and Peru). The UNU/PLEC network includes approximately 100 scholars, most of whom come from participating developing countries. This provides UNU/PLEC with an innovative cooperation network, enabling researchers in Africa, Asia, the Caribbean and Latin America to communicate easily, exchange information and learn from each other.

13. A South-East Asian regional meeting of UNU/PLEC was organized in Yunnan Province, China, in December. The meeting took place along with the workshop on Multiple Resource and Land Use Planning in Biosphere Reserves and Similar Managed Areas as Subjects for Eco-development, which was hosted by the Chinese National Committee for Man and the Environment and organized as part of the South-South Cooperation Programme on Environmentally Sound Socio-Economic Development in the Humid Tropics of the UNESCO-UNU-Third World Academy of Sciences. Part of the meeting involved work at the UNU/PLEC field site in Yunnan.

14. The UNU Mountain Ecology and Sustainable Development project is active in the so-called Mountain Agenda – an informal group of academics and development professionals with a special interest in sustainable mountain development. Mountains occupy about one fifth of the Earth's land surface and are home to one-tenth of the world's population. However, more than half the people on the planet use them for their resources – water, electricity, minerals, timber – and as tourist havens, for recreation and for religious inspiration.

15. Since the United Nations Conference on Environment and Development, held at Rio de Janeiro in 1992, UNU has participated in the United Nations inter-agency and non-governmental organization follow-up process to chapter 13 of Agenda 21, and has become the lead agency for research. As a result, the book *Mountains of the World – a Global Priority,* and a related policy document, were prepared as contributions to the special session of the General Assembly held in June 1997 for the purpose of an overall review and appraisal of the implementation of Agenda 21. These comprehensive works were carried out as a collaborative

effort between UNU, the Swiss Development Cooperation, UNESCO, the Food and Agriculture Organization of the United Nations (FAO) and the International Development Research Centre/ International Potato Centre.

16. A study being done by this project, entitled "Floods in Bangladesh: process understanding and development strategies", is in its final phase and a synthesis paper was produced jointly with the Institute of Geography of the University of Bern.

17. In May, the Fourth International Symposium on African Mountains was held in Madagascar. It focused on African mountain development in a changing economic world, and provided an opportunity for researchers from the UNU/PLEC Uganda cluster to interact with the networks created under the African Mountain Association, promoting further integration between various UNU initiatives.

18. The mountain project is moving into a new phase with reduced financial support from UNU. Efforts were made during the year to strengthen partnerships with other organizations active in the field.

19. In April, UNU and the International Centre for Integrated Mountain Development of Nepal co-sponsored a workshop on the Dynamics of Land-use/Land-cover Change in the Hindu Kush/Himalaya. The main purpose of the workshop was to draft a collaborative research proposal on the topic. Another meeting was held in Nepal in November to map out a long-term strategy for mountain research and institutional collaboration.

20. The project on Environmental Monitoring and Analysis in the East Asian Region monitors land-based sources of pollution in food, water and air. The project has two objectives. The first is to produce calibrated scientific data for regional assessment. The second is to generate policy options for improved regional compliance with environmental accords. The project involves a substantial capacity-building element in its participating laboratories, which are located in China (including Hong Kong), Indonesia, Japan, Malaysia, the Republic of Korea, Singapore, Thailand and Viet Nam. The project is also providing a basis for these countries to share for the first time information on toxic chemicals.

21. The year's work was launched by the international symposium on Environmental Governance and Analytical Techniques: Water Pollution Monitoring in East Asia, which was held in Tokyo and Singapore in February. The Singapore symposium was followed by a training course for the staff of the participating laboratories in the nine countries and territories covered by the project. Tangible results were produced with the receipt of data on toxins in food, soils and fish from all participating laboratories. A database called LANDBASE, containing research results and selected policy options that are available to the region for improving sustainable development, is being developed. Several scientific articles have been accepted for publication on the project's findings.

22. A related UNU activity, the Sassari Project on Coastal Area Management, organized several colloquia and workshops during the year. A database on training facilities that pertain to coastal management, was established with the help of several other United Nations agencies.

23. The UNU project on Natural Disaster Risk Management places natural disaster management within the context of sustainable development. During the year, work was carried out to finalize a theoretical framework for the analysis of social vulnerability and its inclusion in disaster management planning. This novel concept was tested in a pilot phase and presented to scientific audiences at workshops organized in China, Fiji and Germany. In the next phase, the project will begin applying the framework in several case studies. This work is intended to make an important contribution to the International Decade for Natural Disaster Reduction.

24. The Global Environment Information Centre (GEIC), a joint project of UNU and the Environment Agency of Japan, completed its first year of operation in 1997. A centre for global projects, networking and information on environmental issues, GEIC has promoted new levels of cooperation and understanding among countries, key sectors and people to achieve environmentally sustainable development. More than 12,000 people visited the Centre in 1997.

25. GEIC was asked by the secretariat of the United Nations Framework Convention on Climate Change to prepare a study on non-governmental organization consultative mechanisms and the Convention. The study was based on a review of workshop reports and submissions from and consultations with non-governmental organizations, and contained seven main recommendations. The Convention secretariat presented the report in July at a meeting it held with its 165 participating countries.

26. GEIC was also involved in four other activities during the year:

(a) In March it organized a symposium on non-governmental organizations and climate change;

(b) It conducted a study on electrical appliances sold in Japan that produce CO_2 emissions;

Box 1

Freshwater resources in arid lands

Solutions to water scarcity problems need to be found on many fronts. Appropriate technologies can either be traditional and low tech – such as dew-irrigation and water-harvesting – or they can be modern, large-scale technologies, like underground dams. The important issue is not the level of technology but its feasibility and sustainability.

Apart from technological concerns, it is important that the solutions be economically, financially, socially and environmentally acceptable. An important issue is the correct pricing of water – for industrial, domestic and agriculture uses. This is, however, a politically charged issue and virtually no country has yet set water prices at an amount which reflects its real cost. The general feeling is often "How can mankind charge money for something that falls free from the heavens?"

Juha Uitto and Jutta Schneider, eds., *Freshwater Resources in Arid Lands* (UNU Press, 1997).

(c) It released a report on the role of citizens in managing the Nakhodka oil spill, which occurred in January on the west coast of Japan;

(d) The Centre was involved in implementing the information systems used during the third session of the Conference of the Parties to the Convention, held at Kyoto in December.

27. The UNU Centre is cooperating with UNU/INWEH in the sustainable management of water resources, especially for international basins. As part of the Centre's programme, the sixth UNU Global Environmental Forum was held in Tokyo in June, on the theme "Water for Urban Areas in the Twenty-first Century". It focused on the impending environmental crisis caused by the rapid urbanization and increasing per capita water demand, especially in developing countries, coupled with the changes taking place in the global environment. These annual forums allow UNU to present its latest research on global environmental problems, and give the general public an opportunity to learn more about them.

Eco-restructuring for sustainable development

28. The University's eco-restructuring projects are helping to solve pressing environmental problems by generating alternate growth options. UNU/IAS and UNU/INTECH are carrying out this work.

29. Researchers at UNU/IAS are working on a project on Sustainable Global Futures: Scenario Building for the Twenty-first Century. Building scenarios for future global development means using models to encourage debate about global trends. It also means figuring out how these trends will affect sustainable development. Scenarios are not meant to be prescriptions for the future but are hypothetical sequences of events constructed for the purpose of focusing attention on how something might happen. As part of this project, UNU/IAS hosted two back-to-back meetings in March to help improve the quality of Integrated Assessment Models (IAMs) and integrate developing-country perspectives into them.

30. The first meeting was the Asia-Pacific Workshop on Integrated Assessment Models of the Intergovernmental Panel on Climate Change. It had three main outcomes. First, 140 top scholars from around the world exchanged their latest IAM research results on climate change. Second, the meeting provided developing countries with the most up-to-date scientific and technical information on the subject. Third, it gave policy makers an in-depth analysis of climate change concerns as they prepared for the third session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held at Kyoto in December.

31. The second meeting was the Tokyo Modelling Forum on Integrated Global Environmental Assessment, which also had three main outcomes: researchers were able to compare how different IAMs stabilize CO_2 emissions and affect climate change; they made progress in expanding the use of IAMs to developing countries; and they were able to extend the climate change framework of IAMs to include more issues related to sustainable development.

32. UNU and the Tata Energy Research Institute (TERI) of India prepared a study entitled "The UNU-TERI Protocol

on Climate Change: A Blueprint for Kyoto". This study outlined several important issues and suggested concrete actions that a protocol on climate change should include. The information it contained helped politicians attending the third session of the Conference of the Parties to understand global warming and gave them more negotiating options from which to choose.

33. The UNU/IAS project on Environment, Trade and Industrialization is trying to find out what effects the hollowing out of Japanese industry has had on environmental conditions in Japan and in two other countries where Japanese manufacturers have relocated, namely, China and Indonesia. Researchers working on the project are constructing a system for integrated environmental and economic accounting. They are using this system to estimate the green gross domestic products of both China and Indonesia. The researchers are also constructing two operational models for Asia: an international input-output model and a general equilibrium model. These models will assist them in analysing the impacts that changes in the structure of industry, trade and technology have had on energy consumption and the environment.

34. This first phase of the project was completed in 1997. It produced the following results:

(a) Statistics on macroeconomic data, industrial sectors, energy consumption and foreign direct investment were compiled for the Asia-Pacific region. In addition, bilateral and multilateral input-output tables for 1975 and 1985 were prepared for the region;

(b) Changes in the structure of the region's industry, trade and investment for the past 20 years were analysed;

(c) An analysis of energy consumption and pollution emission patterns was completed.

The final results of the project's first phase are being compiled into three working papers. One of the papers, entitled "Interdependence and growth in the Pacific region: an international input-output analysis", has been printed.

35. The Zero Emissions Research Initiative (UNU/ZERI) held its third World Congress on Zero Emissions in Jakarta in July. The Congress, which was opened by President Soeharto of Indonesia, was on the theme "Symbiosis between Global Environment and Industry Growth". Its most important outcome was the Jakarta Declaration, which outlines 10 zero-emissions-related goals that the participants want to accomplish in the future and describes how they should go about reaching them. They agreed to work towards increasing the productivity of natural resources and to have scientists worldwide share their new zero-emissions innovations, among other things. The Declaration was signed by the heads of State of Fiji, Indonesia and Namibia. Zero-emissions initiatives aim to promote waste-free manufacturing processes. When industries are clustered, the waste from one can become the input for another.

36. UNU/ZERI held two other conferences during 1997. The Second Japanese Regional Zero Emissions Network Conference was held at UNU headquarters in October. Also held in October was a joint UNU/Nippon Telephone and Telegraph Forum-Multimedia event on Multimedia in Symbiosis with Nature.

37. Work continued during the year on the UNU/INTECH project on Environmental Regulation, Globalization of Production and Technological Change. The project's main objective is to examine changes in the competitive position of major pollution-intensive industries over the past 25 years, especially producers in newly industrializing countries. The project also examines factors which govern the development and diffusion of "clean technologies",and the potential for, and obstacles to, the transfer of those technologies to developing countries.

38. The project held three workshops in 1997, which provided a valuable opportunity to discuss ideas and to coordinate plans for the project's next phase. The workshop was held in August at the University of East Anglia, United Kingdom of Great Britain and Northern Ireland, the second in March at UNU/INTECH in Maastricht, the Netherlands, and the third in September in Oslo. The project has so far produced seven reports, which were discussed at the second and third workshops of the partners. Considerable progress will have been made on nine developing-country industry case studies by mid-1998, concerning leather, iron and steel, and fertilizer. Researchers working on the project are paying particular attention to the impact of environmental regulation and to the environmental strategies of firms.

39. A number of important insights were uncovered. In policy terms, researchers have confirmed their initial hypothesis of the need for a disaggregated approach. It appears that the links between environmental regulation and competitiveness differ considerably between industries, so that a blanket approach is likely to be inappropriate. This conclusion will be developed further through the case studies of specific branches. The research has also indicated the need to define carefully the concept of competitiveness and to distinguish between the different levels (such as firm, industry and country) at which it is applied. It is important to develop rigorous analytical concepts to assist policy makers in dealing effectively with this issue.

Box 2

The environment and emerging development issues

A sample of tourists on safari in Kenya were asked if they would be willing to pay a US$ 100 fee, added on to the price of their safari, if the money would be used to maintain elephant populations at their current levels. The maximum fee they would be willing to pay was also asked. The average response was US$ 89 per tourist; the median value was US$ 100. Using the median value and multiplying it by the number of tourists who go on safari each year would produce an income of US$ 25-30 million annually, for keeping elephants at their current levels. This amount of money is more than adequate for preserving them.

Partha Dasgupta and Karl-Göran Mäler, eds., *The Environment and Emerging Development Issues*, vol. 2 (Clarendon Press, 1997).

Natural resources in Africa

40. UNU/INRA is devoted to helping African countries to use their natural resources in a sustainable way. During the year, UNU/INRA focused its work on institutional development and capacity-building.

41. One of the priorities of the Institute in 1997 was to determine whether UNU/INRA should set up a new tissue culture and germ plasm conservation facility or if it should support upgrading the existing one at the University of Ghana. The team conducting the feasibility study on this question decided that a new facility was not necessary and opted instead for upgrading the existing one. UNU has agreed to supply funding for this. A team was also engaged to look into the question whether a new African plant-focused herbarium should be built. In its report the team advised that a new one is necessary and recommended that it should be built at UNU/INRA.

42. One of the Institute's capacity-building projects is entitled "Ad hoc Committee Meeting on Women in Natural Resource Conservation and Management for Sustainable Development". As part of this project, four African development experts were asked to draw up guidelines that would direct UNU/INRA on how to incorporate the ideas of women into natural resource management. The final report of the four-woman team suggested that UNU/INRA should:

(a) Strengthen African institutions that are involved with gender research issues;

(b) Focus attention on policy-oriented research that incorporates gender perspectives;

(c) Monitor the resulting policies to ensure that gender concerns are integrated into them;

(d) Ensure that gender-sensitive researchers are involved in UNU/INRA projects.

43. All the above-mentioned reports have helped define the priorities for the UNU/INRA research, training and information dissemination programmes.

44. UNU/INRA also held two workshops to help promote food security in Africa. One, held in October in Ouagadougou, encouraged the participants to share what they had learned about developing national soil fertility action plans. The other workshop, held in Lusaka in November, dealt with developing technologies that would make use of Africa's phosphate resources as a way of improving soil fertility. Both workshops successfully met their stated objectives.

45. A working group made up of the heads of several Ghanaian ministries (agriculture, environment, finance, foreign affairs and science and technology) was established during the year to help oversee the development of UNU/INRA and to work towards the fulfilment of the Government of Ghana's pledge to UNU for UNU/INRA.

Water, environment and health

46. UNU/INWEH completed its first year of operation in 1997. During the year, it worked towards establishing international collaborating offices in several regions around the world. These offices will facilitate project development and serve as regional focal points for training and information dissemination. They will be small units, with one to three staff members, located within government, university or non-governmental organization institutions in strategically located developing countries. The offices will be formal components of UNU/INWEH, not associated

institutions. They will work closely with Governments and organizations within their designated region. It is expected that offices will be located in Jordan, Mexico and Brazil. These offices will be a key element for UNU/INWEH in achieving financial self-sufficiency.

47. Another major element of the UNU/INWEH work programme was the initiation of capacity-building projects. The Network's approach has been to identify a potential opportunity and engage a project leader. Core funds are then invested incrementally to develop the concept, undertake planning missions, identify team members, explore funding opportunities and prepare, submit and negotiate project proposals with international funding institutions. At the same time, a systematic effort has been made to develop relationships with the water-related funding components of international development agencies, Governments, the United Nations system, foundations, the private sector and the non-governmental organization community. The following are the most promising initiatives so far identified:

Certification and Training Programme for Mexican Water and Waste-water Utilities;

Waste-water Biosolids Management in Mexico;

Coastal Marine Ecosystem Management in the Caribbean;

Groundwater Recharge in the Gaza Strip;

Water Harvesting in Arid Regions of Jordan;

Coastal Zone Management in Abu Dhabi;

Sustainable Water Supply Development in the African Sahel;

Sustainable Environmental Management of Lake Victoria, East Africa.

48. UNU/INWEH organized three capacity-building activities during the year. First, the Network sponsored and co-organized a workshop at the National Water Research Institute of Canada. The topic of the workshop was the interplay between aquatic toxic substance pollution and climate change. Second, UNU/INWEH organized a special session on global water networking as part of the World Water Congress of the International Association of Hydrological Sciences, held in Montreal, Canada, in September. Third, the Network worked at supporting the development and operation of the Canadian chapter of the Inter-American Association for Sanitary and Environmental Engineering (AIDIS). AIDIS is a developing-country network that provides information exchange and technology diffusion in the water sector throughout the Americas. The AIDIS network will support local partnering and delivery of UNU/INWEH projects as they develop.

49. UNU/INWEH began two communications activities during the year. One was the launching of its quarterly newsletter *Network News*. The other was the opening of the UNU/INWEH Web site (www.inweh.unu.edu). It will include project listings, calls for project proposals, discussion groups, searchable databases on selected aspects of watershed management, a watershed map library and a notice board. The University of Waterloo in Canada provided three servers, several software programmes, Internet connections and the technical expertise to make the Web site possible. The University of Waterloo's in-kind contribution is worth US$ 300,000. To provide additional support, a cooperative agreement has been reached with IBM International to provide expertise from their global research divisions, software access and other in-kind resources.

B. Science and technology

50. The development of science and technology is vital if the world is to sustain the increasing number of people and their activities. Science and technology can answer the questions how to make human actions more efficient, friendlier to the environment and more conductive to happiness. The work of UNU in this area has two facets: the study of the diffusion of scientific and technological innovations, and basic and applied scientific research.

51. This work falls under six programmes:

(a) **National systems of innovation, science and technology institutions**. This programme focuses on the institutional framework of science and technology in developing countries and, in particular, its relationship to innovation in production and service sectors. The programme's work is based at UNU/INTECH in Maastricht;

(b) **Software technology for developing countries**. This programme concentrates on strengthening developing countries' knowledge of advanced software technology by organizing joint research and development projects and providing postgraduate software engineering and computer science education. This work is carried out by UNU/IIST in Macau – the first international science institute devoted to the software needs of developing countries;

(c) **Applications of biotechnology for development**. This is a regionally focused programme aimed at building up capacities in developing countries that use biotechnology's potential for developing human and animal vaccines, and engineering the genetics of plants and

industrial micro-organisms. This work is carried out by UNU/BIOLAC.

(d) **Microprocessors and informatics**. Rapidly changing technology threatens to "lock out" the developing world from the benefits of the microelectronics revolution. The focus of this programme is on informatics – the way in which information is produced, processed and used. UNU provides postgraduate training in microprocessor technology by conducting regional training workshops. This training is primarily coordinated at the International Centre for Theoretical Physics in Italy;

(e) **Food and nutrition**. The persistence of hunger casts an appalling moral shadow on our age. Work on this programme comprises a long-standing commitment by the UNU to address major nutrition concerns in developing countries and to confront national food, nutrition and health problems. The UNU programmes are undertaken in collaboration with the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and FAO;

(f) **Science and technology**. UNU is investigating scientific and technological applications of information technology for learning and communication that serves human needs. UNU/IAS is carrying out this work.

National systems of innovation, science and technology institutions

52. The UNU/INTECH project on Mercosur Countries' Industrial Innovation Systems in a Rapidly Changing World is analysing and assessing the industrial technology policies and institutions of Argentina, Brazil, Paraguay and Uruguay. This analysis is being done in a domestic and an international context. Researchers working on the project are suggesting programmes or projects that may help those countries to implement better industrial technology policies.

53. The UNU/INTECH project on the Evolution of High Technology Research Institutions and New Enterprise Organizations in China was completed in 1997. This project addressed some critical aspects of the transformation of a national innovation system in selected developing countries during market reforms. China was used as a special case.

54. The findings of this project are being documented in a book entitled *Meeting the Market: the Transformation of China's Industrial Technology Institutions*, the manuscript of which is currently undergoing peer review prior to publication. Results of the project will contribute to the formulation of further studies at UNU/INTECH on the national innovation systems approach to technology policy in developing countries. Some of the project's findings have been circulated and have formed a basis for academic links with numerous institutions, such as the National Science Foundation in the United States of America and the National Innovation Systems Project of the Organisation for Economic Cooperation and Development.

55. The UNU/INTECH project on National Systems of Innovation in Less Favoured European Regions is examining the development of technological capabilities in less favoured areas. The project has placed particular emphasis on the role of technology policy in industrialization. The first stage was finalized in 1997 with the preparation of extensive background reviews of the research and technology capabilities of Greece, Portugal and Spain. The work of UNU/INTECH focuses on the industrially less developed regions of Europe to identify the similarities and differences in the appropriateness of technology policy and systems of innovation between these regions and the developing world.

56. A major UNU/INTECH conference on Technological Policy in Less Developed Research and Development Systems in Europe was held in October in Seville, Spain, and marked the end of the first phase of the project. Eighteen papers were discussed, and 65 participants from Government, international organizations and academia attended. Sessions were conducted on several theoretical and empirical issues related to technology policy and economic and technological development. A book entitled *Technology Policy and Regional Integration* is being prepared for publication and should be available in 1998.

Software technology for developing countries

57. The University's software technology programme strengthens developing countries' knowledge of advanced software and helps them reduce their dependence on innovations from industrial countries. In 1997, UNU/IIST carried out 11 projects, of which 2 were research-focused and 9 were on advanced development, and which resulted in the publication of 27 reports and several prototypes.

58. The UNU/IIST project on Design Techniques for Real-time, Reactive and Hybrid Systems is conducting research on how best to design real-time hybrid systems, which play an important role in today's computer-controlled machinery, and are necessary components in such equipment as elevators, robots and assembly lines. Real-time hybrid systems respond to commands under specified real-time constraints, where the system's safety and its reliability are extremely important. The research approach is based on duration calculus, a kind of logic that deals with time intervals, a field in which UNU/IIST has become an acknowledged leader.

59. During 1997, the project had three main achievements:

(a) New specification and verification techniques were developed for designing real-time, reactive and hybrid systems. These techniques are based on more powerful real-time logics, such as infinite interval, fixed-point operator and two-dimensional interval modalities;

(b) Computer tools were prototyped, including a duration calculus proof checker and model checker. Both of these tools will assist software engineers in applying duration calculus;

(c) Twelve technical reports on the topic were published.

60. During the year, UNU/IIST continued work on its project on Design Calculi and Research for Telecommunication Systems (DESCARTES), which is investigating rigorous approaches to software development in telecommunications. The main focus of the project is to find a way of formal verification for the Systems Description Language (SDL).

61. Four technical reports were produced that compile the achievements of 1997. They address the following topics:

(a) A process of algebraic underpinning of the time-related features in SDL;

(b) A model for operational semantics of SDL that will permit link up with a logic that can express and analyse behavioural properties;

(c) A logic to express and analyse behavioural properties of systems described in SDL, including time-related ones;

(d) A model that abstractly represents the semantics and concepts of SDL.

62. The UNU/IIST project on the Ministry of Finance Information Technology is developing a financial information system for the finance ministry of Viet Nam. The project involves synthesizing the country's budget plans, managing their fund allocations, reviewing tax policies and setting up a system to exchange data among the country's various ministries. Work has so far concentrated on specifying a tax system by analysing the system's domain. Researchers working on the project have also looked into the most appropriate security and taxation policies. A simple prototype of the accounting system has been produced.

63. In the second phase of the project, work was extended to treasury and budget systems, as well as to the systems required for external aid and debt. This work has led to an investigation on how to transform separate and independent specifications of hierarchical systems into loosely coupled, "flat" distributed systems with communication between them. The project is seeking funding from the World Bank.

64. The Manufacturing Industry Information and Command System project is studying issues of relevance to manufacturing industries. The project's goal is to investigate how information technology can best be applied to support the development of manufacturing enterprises in developing countries, so that they can respond quickly and intelligently to changing market demands. The project emphasizes the creation of mathematical models representing all aspects of a firm: marketing, administration, finance and production. The models also include supply chains and products. All of these are prerequisites for the systematic development of software for an information and command infrastructure.

65. During 1997, researchers working on the project concentrated on creating the model for marketing analysis. They have combined two models, one for integration and one for competition, and have found a formula for the optimization problem for choosing an enterprise's best marketing mix: product, price, place and promotion. Researchers also continued to work on the concept of a virtual enterprise.

66. The UNU/IIST project on a Multilingual Script System continued work on the design and prototyping of a software system that supports the creation and editing of multilingual documents. Researchers working on the project have placed particular emphasis on allowing each of the scripts in such a document to retain their natural reading and writing direction. For example, in a document containing both English text and traditional Mongolian script, the English would be written horizontally and left to right, whereas the Mongolian script would be written vertically in left-to-right columns. The project's main objective is to build a prototype of a software system which will allow libraries, universities and government offices to store, write and browse through multidirectional, multilingual documents.

67. The first phase of the project was finished during the year. A comprehensive study of numerous multilingual documents has now been completed, and the requirements for a software that will support multilingual documents have been formulated. Work continued on the project's second phase. The previously created formal model was extended and modified to incorporate functions that will now define the creation, editing and printing of multidirectional, multilingual documents.

68. The Institute also submitted a paper to a meeting held by the International Organization for Standardization in Singapore in January, in which it pointed out a serious error in the coding scheme that the working group for the

standardization of the coding for traditional Mongolian script had been considering.

Applications of biotechnology for development

69. The University's biotechnology programme addresses pressing human, animal and plant health problems. Projects are coordinated by the Academic Division at the UNU Centre and are administered through UNU/BIOLAC in Caracas.

70. The UNU Brucellosis Research Network project has two objectives. One is developing a vaccine against brucellosis, a disease caught from farm animals and unpasteurized dairy products, which causes a feverish illness. The other is promoting exchange and training for Latin American scientists studying it. The research employs a multi-centred coordination approach, where research results are exchanged freely among network members. Workshops are held annually at rotating locations for additional information exchange. In 1997, the workshop was held in Peru, with 24 participants from 10 countries.

71. A related two-week training course on theoretical and practical aspects of epidemiology, diagnosis and vaccination of brucellosis was held in Chile in January. The course explored ways of detecting the brucella organism. Twenty people attended the course.

72. Tuberculosis, a disease that was once thought to have been conquered, has returned to many countries with a vengeance. To help solve this pressing problem, the UNU Tuberculosis Research Network is developing better diagnostic methods and more effective vaccines. Researchers organize a yearly research result and information exchange workshop for network participants. In 1997, this exchange, with 33 participants, was held in Cuba, in conjunction with the Latin American Symposium on Tuberculosis.

73. During 1997, UNU gave 18 young Latin American researchers three to eight months of fellowship training. Under a special agreement, three Latin American researchers received training in Europe and the United States. The specialized training they received focused on the latest techniques of brucellosis immunology.

74. Six two-week training courses were organized during the year in cooperation with Latin America's leading biotechnology institutions. These courses focused on molecular biology and were attended by 176 young researchers.

Microprocessors and informatics

75. During the year, the following microprocessor- and informatics-related courses were given under the joint UNU/International Centre for Theoretical Physics project on Microelectronics and Related Areas:

(a) The Regional College on Microprocessor-Based Real-Time Systems in Physics for Central and Eastern European and Mediterranean Countries was held in February in Italy. The course consisted of 60 hours of lectures and 75 hours of laboratory sessions, and was attended by 35 participants from 15 countries;

(b) The Second Latin American Course on Data Acquisition and Data Filtering was given in Argentina in June and July; it was attended by 22 people from 4 countries;

(c) The workshop on Academic Computer Networks for Developing Countries, was held in Italy from August to December, with participants from Ghana and lecturers from Venezuela;

(d) The workshop on Telecommunications: Science, Technology and Applications was held in Italy during September and October, attended by 66 people from 41 countries;

(e) The regional training workshop on Networking was held in Nigeria in October, 30 participants attended;

(f) The Second African Regional Workshop on Parallel Processing and Applications was held in Gabon in November, 30 participants attended.

76. The Research and Advanced Teaching in Informatics project held the following two-week courses at the University of Yaounde:

Computer Networks, in April and May;

Data Base and Geographic Information Systems, in May;

Parallel Computation on PRAM (parallel random access machine), in September;

Decision Support Systems for Natural Resource Management, in November;

Parallel Scientific Computation, in November;

Systolic Computation, in November.

77. Four other two-week courses in the Geographic Information System, parallel operating systems, computer networks and operating systems were taught by senior

Box 3

Formal model for competing enterprises, applied to marketing decision-making

We present an experiment for modelling and analysing the application domain for competitive manufacturing. The result is a unique formal model which combines two previously separate marketing models. In particular, we capture a marketing mix that includes product, price, place, promotion and the effects of these on the enterprise's sales. The model is built in three stages: a market without marketing, marketing without limits and marketing under limited resources. Our analysis includes a justifying abstraction of two enterprises competing for a single market – one competing against and one cooperating with the firm.

Tomasz Janowski and Rumel Atienza,
"Formal Model for Competing Enterprises, Applied to
Marketing Decision-making",
UNU/IIST *Technical Report*, No. 92.

Box 4

Child malnutrition and feeding practices in Malawi

The 1992 Malawi and Demographic Health Survey data were used along with multilevel models to assess the association between breastfeeding practices, socio-economic and morbidity variables, and the nutritional status of children under the age of five. About 27 per cent of under-five children in Malawi are underweight, and nearly 50 per cent are stunted. the results of this study suggest that socio-economic factors, morbidity and inappropriate feeding practices are some of the factors associated with malnutrition in Malawi. High socio-economic status is associated with better nutritional status, whereas morbidity within two weeks before the survey is associated with low weight-for-age Z scores. Breastfeeding is almost universal and is carried on for about 21 months, but the introduction of complementary food starts much too early. Only three per cent of Malawian children under the age of four months are exclusively breastfed. Children 12 months or older, who were still breastfeeding at the time of this survey, were of lower nutritional status than those who had stopped breastfeeding. The analysis also showed a significant intra-family correlation of weight-for-age Z scores. These scores were at about 39 per cent.

UNU, *Food and Nutrition Bulletin*, vol. 18, No. 2

members of the University of Yaounde at other institutions in French-speaking African countries.

Food and nutrition

78. The UNU food and nutrition programme has several projects working to solve human nutrition problems. During 1997, the programme maintained four major global projects and numerous smaller ones. It provided 15 fellowships for advanced training and it also published quarterly issues of two journals, *Food and Nutrition Bulletin* and *The Journal of Food Composition and Analysis*. The programme's mission statement and goals were also reassessed during the year as part of a planned transition from a UNU Centre programme coordinated out of Boston, United States, to a permanent Research and Training Coordinating Centre at Cornell University, New York State. The programme will soon be designated the Centre for International Nutrition Action and Knowledge.

79. The project on an International Network of Food Data Systems (INFOODS) almost attained its goal of involving every country in the world in its network of regional food composition databases. Through the use of a standard tag name system, data about the composition of food can now be exchanged electronically around the world. Food composition databases were completed during the year in Central America and Panama, China, Mexico, Central Asia and South-East Asia, and the western Pacific.

80. The UNU Overcoming Critical Micronutrient Deficiencies project has achieved a major breakthrough in the control of iron deficiency. Ten studies on iron-supplementation in test groups made up of women and children in Bolivia, China, Guatemala, Indonesia, Malaysia and the United States have now been completed. The results of these studies were reported by UNU to the Administrative Committee on Coordination Subcommittee on Nutrition in March. The results indicate that, at an appropriate dosage and within assured compliance, haemoglobin levels are the same after two or three months with either daily or weekly supplementation – unless there are complicating factors, such as malaria. This means that the more cost-effective weekly supplementation should be used. Supplementation projects with this new discovery have already been initiated in Central Asia, China, Ecuador and Indonesia.

81. In March, UNU, in cooperation with the Central Food Technology Research Institute of India and the Indian Ministry of Food Processing Industries, organized the International Conference on Traditional Foods. Fifty participants from Asia, Africa and Europe attended. The purpose of the Conference was to promote scientific investigation into traditional foods that are consumed by the majority of people in developing countries. It also sought to form a network of scientists who will share their research results.

82. The International Dietary Energy Consultative Group (IDECG) is sponsored by UNU in collaboration with the International Union of Nutritional Sciences. The report of a seminal 1996 workshop on the Causes and Consequences of Intrauterine Growth Retardation is being published as a supplement to *The European Journal of Clinical Nutrition* and will be reprinted as an IDECG monograph. The 1997 IDECG workshop on the Lower and Upper Limits of Adaptation to Energy Intake and Its Principal Substrates: Carbohydrates and Lipids was held at FAO headquarters in Rome in December.

Science and technology

83. UNU has two science and technology-related projects, namely, the Universal Networking Language (UNL) and Knowledge Systems for the Future: Advancing to the Virtual University of the Twenty-first Century. Both projects are being carried out by UNU/IAS.

84. Researchers working on the UNL project are developing an Internet plug-in that, together with its companion software, enconverter and deconverter, will allow anyone with Internet access to "enconvert" text from the language of a Member State into UNL, or "deconvert" text from UNL into another language.

85. Developing this software is important because most of the Internet's key resources – not only software but things like directories and information libraries – are in English, and e-mail, news groups and other text areas are generally limited to Roman characters, forcing many countries to use complicated phonetic versions of their languages. While the Internet's reach may be global, in practice the bulk of its vast resources are limited to people who can read and write English. The Internet needs to become multilingual and capable of reconfiguring all of the world's alphabets if it is to be a true facilitator of worldwide communication.

86. Most software programs now on the market can only translate one language into another, such as Chinese into Russian. The UNL project is taking this a step further by designing a truly multilingual software in which a person can include an Arabic quotation in a Japanese text that will be properly displayed on the reader's computer in Paris or Mexico City.

87. UNL is based on a two-step process called multilingual conversion. First, the device thoroughly analyses the sentence structure and word meanings in the text, clarifying

them when possible by means of a dialogue with the writer. Second, the text is "enconverted" into an intermediate, abstract representation called UNL, which is composed of hundreds of thousands of universal words and symbols. This abstract representation of the text is then made available on the Internet and used to generate translations into different languages.

88. UNU/IAS is creating the prototype software, while a network of 17 universities and research institutions is working on developing the specific components of 13 languages. Approximately 100 computer and linguistic researchers are involved in the project.

89. Researchers working on the Knowledge Systems for the Future: Advancing to the Virtual University of the Twenty-first Century project had two major accomplishments in 1997. First, more than 500 Internet users joined the UNU/IAS brainstorming session on the future of Asian higher education. Contributions were made on how to improve the following higher education topics: access, capacity-building, international cooperation and lifelong learning. The results of the session were presented at a UNESCO conference on National Strategies and Regional Cooperation for the Twenty-first Century, which was hosted by UNU in July.

90. Second, UNU/IAS researchers contributed to the UNESCO conference. One of the main issues discussed was the role of technology and virtual campuses, in connection with which UNU/IAS and the Keio University of Japan demonstrated a video conference to the audience. Panellists from Hong Kong, China, the Philippines and Thailand were linked up via satellite and the Internet. The remote panellists, as well as those present in Tokyo, discussed technology-related questions during the video conference.

C. Development

91. Increasing globalization and liberalization, and the countering forces of regionalism and protectionism, have a profound impact on a country's prospects for economic and social development. the University's research sheds new light on these trends as well as the economic, environmental and human aspects of development.

92. This work is organized into five programmes:

(a) **Globalization, liberalization and development.** Globalization and liberalization are having an immense impact on both developing and developed countries. This programme analyses the opportunities and difficulties inherent in these trends. This work is carried out at UNU/WIDER in Helsinki;

(b) **Distribution, development and the economics of transition.** This programme targets the academic community and policy makers in developing and former socialist countries. Researchers working on these projects are examining new models for providing public merit goods in developing economies. They also study the impact of land distribution and reform. Work on this programme is carried out by UNU/WIDER;

(c) **The role of technology policy in industrialization and industrial competitiveness**. This programme explores the importance of technology in industrialization and technology's effects on a country's economic competitiveness. Activities in this area are conducted at UNU/INTECH in Maastricht;

(d) **Technological change, and economic and social exclusion**. The implications of technological change on income distribution are being studied in this programme. In particular, researchers focus on areas of economic and social exclusion. This work is coordinated by UNU/INTECH;

(e) **Mega-cities and urban development**. This programme addresses major issues confronting mega-cities. It focuses on three topics: demographic trends, the sources and consequences of economic development and social transformation, and the kind of management that is needed to enhance urban living. UNU/IAS is conducting this work.

Globalization, liberalization and development

93. The UNU/WIDER Short-term Capital Movements and Balance of Payments Crises project has investigated the controversial issue of regulating short-term capital flows. These capital flows can upset a country's economy as they cause its exchange and interest rates to behave in a volatile way. The Mexican and Thai economic crises are illustrative examples of this.

94. The project's first research dissemination seminar was held at the South-East Asian Central Banks Research and Training Centre at Kuala Lumpur in August. The seminar was timely as the Thai baht had just been allowed to float freely and several South-East Asian countries were experiencing currency devaluation. During the seminar, participants from Indonesia, Malaysia, Nepal, the Philippines, the Republic of Korea, Singapore, Sri Lanka and Thailand actively debated the choices and dilemmas they have faced as capital flowed into their country. By the end of the seminar, all of those countries had concluded that their

central banks needed to learn more about how to monitor and supervise a complex macro-economy.

95. UNU/WIDER has produced a book on this research, entitled *Short-term Capital Flows and Balance of Payments Crises*. The book includes a chapter on the recent South-East Asian crisis, which identifies the policy mistakes made in financial liberalization that led to the crisis, and the impact on other countries. It also suggests measures that countries can implement to reduce the negative effects of financial globalization. Several of the studies contained in the book have been published in UNU/WIDER's *Research for Action* series. This project has brought together experts from the World Bank, the International Monetary Fund (IMF), and the central banks and universities in several countries.

96. The UNU Centre has a development-oriented project on Asia and Africa in the Global Economy, which got off the ground in 1997. The project's main goal is to provide recommendations to sub-Saharan African Governments on how to expand their links to the global economy. These recommendations will be based in part on the successful experiences of the South-East Asian countries.

97. During the year, researchers working on the project collaborated with the African Economic Research Consortium in organizing a conference on Comparative African and East Asian Development Experiences, which was held in South Africa in November. This was a large, high-level academic meeting of Asian and African researchers. Twenty papers that examined the development experiences of East Asia and sub-Saharan Africa were presented and discussed. The UNU received $95,000 from the United Nations Development Programme (UNDP) to continue implementing the project.

Distribution, development and the economics of transition

98. The UNU/WIDER project on Economic Theories and Strategies of the Transition has compared the different transition models that have been observed in Eastern Europe, the former Soviet Union, China, Mongolia and Viet Nam. The project has focused on two issues, the strategies of transition, such as shock therapy versus gradual reforms, and the outcome of the transition. Researchers are examining the market stereotypes emerging in post-socialist countries (income distribution, the role of the State, industrial structure and international trade specialization) and seeking to determine what long-term development patterns will prevail in the future.

99. The project's findings are being compiled into a book entitled *Transition Strategies: Alternatives and Outcomes*, which will be available in the early part of 1998. Some of the results have already been published in the UNU/WIDER *Research for Action* series and as working papers.

100. Another UNU/WIDER project, on Economic Shocks, Social Stress and the Demographic Impact of Sudden Impoverishment, has investigated the reasons behind the recent unfavourable mortality changes that have been observed in economies hit by sudden economic shocks and mounting uncertainty. A shortage of credible analyses and explanations of the recent population crisis has made it difficult to mobilize suitable policy responses. By testing the concepts of "psychological stress" and "economic stress", the project has tried to specify and test a mortality model using a multidisciplinary approach and benchmark country case studies. One of the main findings was the important role played by psychosocial stress (as a consequence of family instability and breakdown, job insecurity, unemployment, sudden impoverishment, high inflation and migration) as the main source of the increase in mortality.

101. The research results of this project will be published in 1998. Two papers have already been published in the UNU/WIDER *Research for Action* series and three working papers by the directors of the project were published during 1997.

102. Land is the most important asset to an agrarian economy, but much of the land in developing countries is not accessible to poor farmers and that which is may either not be used to its full potential or may be used in an unsustainable way. Better access to land for the rural poor is a necessary step towards reducing poverty.

103. The UNU/WIDER ongoing project on Land Distribution, Land Reform and Economic Growth is developing case studies that explain ways in which poor farmers can access land. The project is a collaborative effort among development experts from FAO, the World Bank, the International Food Policy Research Institute, the Overseas Development Institute and several universities in the United States, Europe and Asia. The researchers working on the project are preparing their results for a meeting to be held in mid-1998; the findings will be published at a later date.

The role of technology policy in industrialization and industrial competitiveness

104. The UNU/INTECH project on Foreign Direct Investment, Technology Transfer and Export-orientation in Developing Countries: Empirical Studies of their Determinants is conducting a detailed analysis of factors that improve a country's attractiveness as a recipient of investment from American and Japanese multinational

Box 5

New entrepreneurship in the post-Soviet Russian Federation

An important feature of post-Soviet entrepreneurship is that it is resource-driven, rather than opportunity-driven. Successful entrepreneurship in the Russian Federation means possessing vital social resources. Success or failure depends on the amount, type and combinations of various social resources that one can access, such as access to finance or political power. The popular image of a successful entrepreneur who builds a financial, commercial or production empire from scratch, using only entrepreneurial abilities, is a myth in the Russian Federation. The vast majority of post-communist entrepreneurs are those who previously had or now possess better social resources; and those who combine various social resources for entrepreneurial action.

B. Batjargal, UNU/IAS *Working Paper* No. 28.

corporations in technology-intensive industries, as well as export-oriented and research and development investments.

105. A subsection of this project created the database called Global Technology and Economic Development (GLOBTED), which contains data on several indicators of technological and economic development for 74 countries. It includes data on foreign direct investment, stocks and the economic activities of the World Bank, IMF, the United Nations Conference on Trade and Development (UNCTAD), the United States Department of Commerce and the Ministry of International Trade and Industry of Japan.

106. During the year, several academic papers and journal articles were written by the project's researchers. Three books were also produced, one of which, *Technology, Market Structure and Internationalization: Issues and Policies for Developing Countries*, was published in October. A second book, *Globalization, Foreign Direct Investment and Technology Transfer: Impact on and Prospects for Developing Countries*, is now undergoing a review. A third book, *Improving the Quality of Foreign Direct Investment Inflows in Developing Countries: Empirical Analysis of the Role of Multinationals in Industrialization, Export Expansion and Innovation*, is still in manuscript form and will soon be prepared for publication.

107. UNU/INTECH started a new project in 1997 on Investment and Technology Decisions of Firms. The project focuses on the nature of the private investment decisions of southern European manufacturing firms required to incorporate technological change in the transition to sustained and competitive growth in the single European market. From this analytical approach, well grounded proposals for policies to overcome failure can be derived. The project's output will take the form of (a) a book containing a methodology for evaluating bank loans by providing benchmarks for effective investment decisions and recommendations for enhanced policy initiatives in the future; and (b) a series of published studies of technological innovation and corporate finance in southern Europe.

108. The first project workshop was organized in July at UNU/INTECH. The workshop discussed the analytical approach and the methodology to be adopted by the project. An agreement was reached on a detailed work schedule for each of the members in the five research teams.

Technological change and economic and social exclusion

109. The UNU/INTECH project on Teleworking: Implications for Employment and Trade in Developing Countries, Malaysia and India is exploring how poorer countries, or disadvantaged groups within a country, can benefit from the so-called telematic revolution. The project will document the extent of telework in India and Malaysia and will assess teleworking's potential for creating employment and new career opportunities, especially for women. The research will look at telework within and across national boundaries and will examine its impact on key service sectors, such as software, finance and banking, media and publishing, and education. A major focus of the research is to assess the potential of telework for ecologically sound urban planning.

110. The project had three accomplishments in 1997. First, the fieldwork was launched in close cooperation with the major stakeholders. A planning meeting was held in India

in July with senior industrialists, trade union members, women's groups, academics, government officials and UNU/INTECH partners from the National Centre for Software Technology. Second, a planning meeting was held in Malaysia with active participation and collaboration by the major stakeholders. Third, preparations were made for the presentation of the research results at the international Conference on Electronic Commerce, which was held in New Delhi in December and organized by the South-East Asian Regional Conference on Computing.

111. The UNU/INTECH project on Europe and the Developing World in the Global Information Society: the Implications for Employment, Education and Trade is exploring the challenges and opportunities that the information revolution poses for poorer regions and disadvantaged groups located in the European Union and developing countries. The project places the issue in the context of globalization and the emerging world trading order. An international workshop was organized around this project in October 1996, funded in part by the European Commission. The workshop brought participants from both the developing world and Europe together in the hope of initiating a dialogue between them. The main output of the project will be produced in two volumes, both of which are now being prepared for publication.

112. The project on the Information Revolution and Economic and Social Exclusion in Developing Countries identifies the factors that exclude groups or countries from access to information. It also highlights the way in which the technology itself could be used for economic empowerment and inclusion. An international workshop – the focal point of the project – was funded by the Ministry of Foreign Affairs of the Netherlands. Thirty participants attended.

113. Work on the UNU/INTECH project on Monitoring the Impact of New Technologies on Women's Industrial Work in Asia was completed in 1997. The project had been exploring the impact of information-intensive production modes on the quality and quantity of women's employment. The project focused on manufacturing and service sectors in Asia. The objective of the researchers working on the project was to highlight factors that make it difficult for women to obtain relevant technical and business skills. In particular, the researchers assessed the impact of globalization and technological changes on the ability of women to organize around workplace rights. The project initiated a policy dialogue between non-governmental organizations and policy makers on the question of human resource development and dignity at work. Eight countries were studied: Bangladesh, China, India, Indonesia, Malaysia, the Republic of Korea, Sri Lanka and Viet Nam.

114. A book entitled *Globalization, Technological Changes and Women's Work in Asia*, which synthesizes all of the project's research, is being prepared for publication. A summary of the research findings was disseminated to non-governmental organizations in the newsletter produced by the Committee for Asian Women. Two articles were written on the project's findings. One, entitled "Women's demands and strategies: women workers in the context of economic globalization", was published in *Looking at the World through Women's Eyes: Plenary Speeches from the NGO Forum on Women, Beijing, 1995*. The other was "Bridging the gap between the State and non-governmental organizations: formulating industrial policies and women's work for the future".

Mega-cities and urban development

115. There are mounting environmental pressures on urban areas all over the world, but they are felt most strongly in Asia's rapidly changing cities. While some of the problems resulting from rapid change may be related to unique local conditions, many of them are caused by globalization.

116. Past analysis of urban environmental problems has tended to focus on management decisions made by local governments and the role of local markets, but many environmental problems are created by outside sources. Solutions to these problems must incorporate an understanding of what is happening at the international level.

117. During the year, a research agenda for the project was developed with the assistance of 11 experts from eight different Asian countries. Proposals to carry out case studies on 10 Asian cities were evaluated and set in motion. This research will give a clear indication of what is happening in those cities. A book based on this work is expected to appear in 1998.

D. Peace and governance

118. During the late 1980s and the early 1990s, the international community took an activist approach towards crises and conflicts. This approach was successful in a few cases, but for the most part it ended in disappointment. Failures occurred because the problem-solving tools available to the international community were not efficient and firm commitment from the world's most powerful countries was often not forthcoming. By the mid-1990s, extreme caution had become the prevailing attitude in international politics.

119. The UNU peace and governance programme has three focuses: studying past events, conceptualizing the present

and planning for the future. Its work falls under three programmes:

(a) **Security studies**. The security studies programme is examining major changes occurring in the international distribution of power, and trying to identify the implications of such changes for the institutions and actors that handle international security issues. This work is being carried out by the Academic Division at the UNU Centre and at UNU/WIDER in Helsinki.

(b) **Governance studies**. The governance studies programme is studying how evolving norms and values influence democracy, special attention being paid to the correlation between democracy and human rights. The Academic Division and the UNU programme on governance in Spain are responsible for this programme's activities.

(c) **Leadership training**. The UNU Leadership Academy in Jordan is exploring the diplomatic challenges of the twenty-first century by determining what kind of training is needed by international diplomats, managers and civil servants.

Improving the programme

120. During the year, a great deal of effort was spent on making the following improvements to the peace and governance programme:

(a) Coherence was increased. Three new research clusters were designed, namely, security studies, governance studies and United Nations studies. In addition, the links between the peace and governance programme and the research being done at the University's other research and training centres and programmes was strengthened;

(b) Research activities were rationalized. First, some projects were eliminated and the costs of several others were cut. Second, better project development and implementation measures were put in place;

(c) The programme will reach out more to academics. Open door project briefings will now be held regularly at the UNU Centre.

Security studies

121. The Foundations of Peace Project is providing policy recommendations and guidelines for future international peace operations. Researchers working on the project examine the impact of development, humanitarian actions and human rights on the peace processes in several areas. This project has been commissioned to researchers at King's College, London University. Peace-related issues in Liberia and the former Soviet Union were investigated during the year.

122. The University revised its multi-year project on The United Nations System in the Twenty-first Century (UN21 Project). The project has been simplified and the amount of money being spent on the research theme for 1997 has been cut. More responsibility has been placed on the project's research organizers to produce useful information.

123. The project's objective is to analyse the role of international organizations and search the best United Nations model for the next century. The project is divided into five actor-specific research groups: States, non-governmental organizations, market forces, regional institutions and international organizations. Each year the research groups focus on a specific theme; in 1997 the theme was the environment. A book entitled *The United Nations and the Management of Security Studies* was being prepared for publication in 1998 by UNU Press.

124. Since the end of the cold war, major social conflicts and civil wars in developing countries have increased in number and in the magnitude of their effects. They are the biggest source of human suffering in the world today. TheUNU/WIDER project on the Wave of Emergencies of the Last Decade has undertaken the first extensive analysis of the economic and political roots of humanitarian emergencies. As a result of this analysis, the project is able to identify early economic and political measures that will help to prevent such disasters. The study uses general economic and political analysis and case studies, for example on Afghanistan, Bosnia, Burundi and Rwanda.

125. The project has several components which will result in the publication of three books in 1998. The components will provide, first, an overview of the nature and causes of emergencies. Second, they will present detailed case studies of different types of conflict. Third, they will explore preventative action of different kinds, as will be illustrated with two case studies. Several studies done so far on the project have been published by UNU/WIDER.

Governance studies

126. The UNU project on the Changing Nature of Democracy is looking into the different forms democracy can take. It is also re-evaluating ways to achieve democracy and is finding out how democratic institutions can promote peace, human rights and development. A manuscript entitled *The Changing Nature of Democracy* was edited during the year and will be ready for publication by UNU Press early in 1998. The project also held two regional workshops during the year, one in Kuala Lumpur and the other in Budapest. Books based on those workshops are being

Box 6

The urban challenge in Africa – growth and management of its large cities

Africa has lost more than it has gained from integration into the world economy and global politics. For much of the continent, dependency, marginalization and a lack of policy autonomy are the main outcomes of its integration. External forces – be they transnational corporations or international agencies – call the shots. They heavily influence patterns of investment, they prevent debt from being written off and they dictate so much of the continent's internal policies that many countries grow dependent on outside help.

However, it is wrong to be so pessimistic about the impact of global forces on Africa. Egypt benefited from its role in cold war politics and as a labour source for Middle Eastern countries. The Libyan Arab Jamahiriya has made a lot of money from high oil prices. And other North African countries have made good use of their proximity to Europe and their ties to the Arab world.

In southern Africa, the achievement of political freedom in the continent's industrial giant has dramatically changed the region's prospects for economic growth and development. And some of the smaller countries, such as Botswana, have made significant economic and social progress, while others like Uganda and Mozambique have achieved peace after periods of civil war.

Carole Rakodi, ed.,
The Urban Challenge in Africa – Growth and Management of Its Large Cities
(UNU Press, 1997).

prepared for publication in 1998 under the titles *Democracy in South-East Asia* and *Democratization in Eastern Europe*.

127. The UNU programme on governance in Barcelona continued to explore the institutional implications of economic change. The programme's particular focus was on Latin America and the Mediterranean area. During the year, the programme organized several workshops and its staff played an active role in important colloquia with scholars and policy makers in Latin America by contributing several occasional papers and published monographs.

128. The UNU/IAS Environment and Multilateral Diplomacy project addresses sustainable development issues from the perspective of the collective responsibility of States. Its initial focus has been on the dynamics of international forums and the role of the main actors participating in multilateral environmental negotiations. The project's aim is to bring scientific findings on development and sustainability concerns to policy makers involved with international negotiations.

129. In 1997, the project held two workshops, one in Tokyo, on the interface of the Intergovernmental Panel on Climate Change and policy-making, the other in Brazil, on trade and the environment in MERCOSUR countries. A paper on the workshop held in Brazil is being prepared for publication and will be available in 1998.

Leadership training

130. UNU/ILA launched its first leadership programme in June. The 32-day programme gathered 163 would-be leaders from 63 countries in Jordan to teach them about the art and science of leadership. The future leaders participating in the programme attended an average of three lectures each day given by the high-level speakers. The programme also included a six-day study visit to Israel, Egypt and Palestine.

131. UNU/ILA also conducted or co-sponsored two additional leadership-related events in 1997. The first was Global Leadership Week, held at the University of Maryland in November. The second was the International Conference on Mediation and Conflict Resolution, organized by the Initiative on Conflict Resolution and Ethnicity and held in November in Northern Ireland, United Kingdom.

Public forums

132. The peace and governance programme organized two public forums in New York during the year. The first was on the United Nations in the Twenty-first Century (UN21), which was held in January. The second was on the Reintegration of Transition Economies into the Global Market System, which was held in March.

133. The programme also held three events during the year in cities other than New York. A UNU public forum on European and ASEAN Integration: Similar Models? was held at UNU in March. A publication with that title has been issued. A UNU panel on the United Nations and the United States: Toward a New Deal? met in Seoul in August. The papers presented at that event are now being edited and will be published in 1998. A UNU public forum on the Basic Law of the Hong Kong Special Administrative Region and the Possible Consequences of the Integration of Hong Kong on the International Arena was held at UNU in September.

134. These forums gave academics, policy makers and the general public an opportunity to learn about the University's latest research findings.

Chapter III
Building capacities: postgraduate education

135. The UNU postgraduate education programme has three purposes. First, it strengthens academic institutions in developing countries, enabling them to conduct high-quality research and train future scholars. Second, it helps alleviate the intellectual isolation academics from developing countries often face. Third, it strengthens the global outreach of the University.

136. Over 1,596 fellows have completed UNU training and fellowship programmes since they began in 1976. In 1997, 70 UNU fellows finished their studies, while another 104 began training.

137. The fellowships in the following subjects were awarded by UNU during the year:

Studies in geothermal energy at the National Energy Authority, Iceland (15);

Renewable energy systems at the Institute of Technology, India (8);

Remote sensing at the Instituto Nacional de Pesquisas Espaciais, Brazil (7);

Science and technology policy at the Universidade Federal do Para, Brazil (6);

Science and technology at the Universidad Estadual de Campinas, Brazil (2);

Biotechnology at various Latin American institutions (18);

Food science and technology at the National Food Research Institute, Japan (5);

Food and nutrition at the Central Food Technology Research Institute, India (1);

Production and use of food composition data bases at the University of the Western Cape, South Africa (3);

Applied human nutrition at the University of Nairobi (3);

Community-based planning and management at the Nutrition Centre, the Philippines (3).

138. The University held its annual Global Seminar series at two locations in Japan: Shonan Village in Kanagawa Prefecture in September and Kobe in October. These seminars are designed to enhance international awareness among Japanese students through interaction with the UNU global network of experts. Approximately 140 Japanese and foreign students participated. The seminars are supported by the Japan Foundation for the United Nations University and are sponsored by several corporations.

139. During the year, UNU/WIDER offered courses at the University of Helsinki and the Helsinki School of Economics and Business Administration on the economics of development (48 lecture hours with 70 people enrolled) and transition economics (24 lecture hours with 30 participants). Both courses were taught by UNU/WIDER staff and contributed to the students' knowledge of economic concepts and theories. The courses also make UNU and UNU/WIDER better known among the future policy makers and business people of Finland.

140. In March, UNU/WIDER began its annual lecture series with a presentation by Douglas North, winner of the 1993 Nobel prize in economics. Mr. North's lecture was on the contribution of the new institutional economics to an understanding of the transition problems. The lecturer has the right to assign a research fellowship to a young scholar from a developing or transitional economy working on a topic related to the research programme of UNU/WIDER. The fellowship has been awarded to a young Chinese economist who is working under the supervision of Mr. North.

Box 7

China in the twenty-first century: politics, economy and society

China urgently needs to go through the experience of creating a new and stronger sense of nationalism, and this can only come about through an open dialogue by all the Chinese people. And what would such a process be but democracy at work? That is to say, the creation of a modern sense of Chinese nationalism must go hand in hand with the emergence of some form of democracy.

In fact, obstacles to democracy in China also turn out to be major obstacles for the realization of a true sense of Chinese nationalism. The leadership at times seems aware of this problem as it acknowledges the existence of a moral crisis and the need for a healthier sense of civilization, but it shies away from opening the society up so as to allow popular forces to define a new spirit of national identity. The process of redefining the soul of China cannot be indefinitely delayed because widespread scepticism has already given way to increasing cynicism, that will in time become alienation and then nihilism – and the negative spirit of nihilism cannot give birth to the constructive values and ideals essential for a strong sense of nationalism.

The future of China as a great nation requires a transition to some form of democracy. Fortunately, the terrible turmoil China has gone through during the last four decades has largely exhausted both the leaders' and the people's tolerance for authoritarianism. Therefore, the time for democratic development may not be far off.

Fumio Itoh, ed.,
China in the Twenty-first Century: Politics, Economy and Society
(UNU Press, 1997).

141. UNU/WIDER continued its public lecture series. Six lectures were given by UNU/WIDER staff members, public figures from Finland and international visiting scholars on topics related to the Institute's research.

142. UNU/WIDER also offered a nine-month internship programme for young Ph.D. students. Three students from Finland, one from France and one from Ghana participated. The interns work closely with the research fellows on projects and are expected to prepare at least one research paper of their own.

143. The UNU/IAS postgraduate education programme offers Ph.D. fellowships and short training courses in three thematic areas: eco-restructuring for sustainable development, mega-cities and urban development, and multilateralism and governance. Fellows carry out their research in Tokyo under the supervision of a UNU/IAS faculty member or an affiliated UNU/IAS network scholar. Fellows are distributed into teams of six to eight members, each team including several fellows, an adjunct Japanese professor, a visiting scholar and a UNU faculty member. Upon completion of their research, fellows write an additional paper related to their dissertation – one which will make a distinctive contribution to the Institute. During 1997, 18 Ph.D. fellows from 14 different countries participated in the programme.

144. UNU/IAS also held the following short training courses:

UNU/IAS-TERI training course on Energy, Environment, Resources and Sustainability, in March in New Delhi;

UNU/IAS-Asian Institute of Technology training course on Planning for Environmentally Sustainable Development in the Asia-Pacific Region, in September in Bangkok;

UNU/IAS training course on Multilateral Diplomacy and Environmental Negotiation, in March in Tokyo;

UNU/IAS seminar and workshop on Trade and Environment from a Mercosur Perspective, in October in São Paulo, Brazil;

UNU/IAS-UNDP-Indira Gandhi Institute of Development Research training course on Environmentally Sustainable Development, in April in Bombay, India.

145. Two interns studied at UNU/INTECH in 1997 under the Institute's Ph.D. internship scheme. An additional 11 students received training as part of the joint UNU/INTECH-MERIT (Maastricht Economic Research Institute on Innovation and Technology) Ph.D. programme, under which UNU/INTECH financially supports developing country students with a monthly grant, a waiver of tuition fees and paid health insurance. The support the students receive is conditional on good academic performance.

146. During the year, 47 fellows from 17 different countries visited UNU/IIST. They participated in UNU/IIST projects and, in so doing, received three types of training. The first is research training, in which fellows conduct software technology research. During their fellowship period, fellows are expected to write scientific reports and are encouraged to submit those reports to journals and scientific conferences. The second is development training, where fellows undertake advanced software development. The third is curriculum development, the aim of which is to assist universities in developing postgraduate and postdoctoral software technology courses. UNU/IIST brings professors and lecturers from developing countries to the Institute on three-to-six-month fellowships, during which time they prepare curricula and materials for their courses. At the end of their fellowships, they take home those course materials, together with the necessary software to teach them.

147. UNU/IIST offered numerous offshore training courses during the year:

Postgraduate Course on Formal Software Development Methods, in Cameroon, China (2), Gabon and Japan;

Postgraduate DESCARTES Course: Design Calculi and Research Telecommunication Systems, in China, Brazil, Indonesia, Pakistan and South Africa;

Seminars on Duration Calculus, in Bulgaria, Romania, the Russian Federation, and Ukraine;

Postgraduate Course on Formal Methods in Software Development and Duration Calculus, in Argentina and India;

Formal Software Development Methods and the Duration Calculi: from Programmes on Large-scale Systems and from Untimed Reactive Discrete Systems to Real-time Hybrid Systems, in Macau.

148. The UNU/IIST offshore courses have three main objectives. The first is to promote awareness and education. The second is to identify potential fellows. The third is to identify project partners.

149. UNU/IIST has continued to cooperate with the University of Macau's Software Engineering Programme through lecturing and M.Sc. thesis supervision. In the first quarter of 1997, UNU/IIST organized a series of weekly computer science seminars involving seven UNU/IIST staff. These seminars lasted for 13 weeks. In the first semester of 1997/98, UNU/IIST staff have taught three courses weeklyto M.Sc. students on the fundamentals of software engineering.

150. During the year, UNU/INWEH began work on its training curriculum in watershed management. Two monitoring-related activities were initiated. First, an agreement was reached with the United Nations Environment Programme (UNEP) and WHO to transfer to UNU/INWEH for future implementation the training component of the Global Water Quality Monitoring Programme of the Global Environmental Monitoring System.

151. Second, and linked to the GEMS/WATER initiative, UNU/INWEH has organized a consortium of universities, government laboratories and private enterprises to develop and deliver a comprehensive training programme in analytical water chemistry. Tentative agreements have been reached with the Hewlett-Packard Corporation and Varian International, major analytical equipment manufacturers, to join the consortium. The two companies will participate in curriculum development, assist partner institutions in acquiring instrumentation for training laboratories and support clients from developing countries to participate in the training programme. The first training model will be offered in 1998.

152. In April, the Rector and the President of the Kirin Brewery Company of Japan presented five UNU fellows with award certificates for completing one year of training at the National Food Research Institute (NFRI) of Japan in Tsukuba. The main purpose of the training programme is to build up the capacity of developing country food research institutions. The UNU fellowships started in April 1993 with a five-year contribution of ¥34 million ($250,000) from Kirin. This commitment has now been extended for an additional five years. Kirin's contribution lets UNU provide five developing country fellows annually with one-year research and training opportunities in food science and

technology at NFRI and support for their continued research efforts when they return home.

Chapter IV
Dissemination of research results

153. The University's dissemination activities reach out to academics and policy makers with UNU research results. Dissemination also increases the University's international visibility and promotes its work. These efforts include publicizing conferences, promoting new publications and disseminating information electronically.

154. During the year, UNU Press sold 13,000 books. Those sales resulted in revenue of more than $200,000. The Press also gave 1,000 free copies of books to libraries and other institutions located in developing countries.

155. UNU Press published nine new books in 1997. The new titles cover a broad range of subjects:

China in the Twenty-first Century: Politics, Economy and Society;

Environment, Energy and Economy: Strategies for Sustainability;

Freshwater Resources in Arid Lands;

The Impact of Chaos on Science and Society;

A New Europe in the Changing Global System;

The New Globalism and Developing Countries;

Regional Mechanisms and International Security in Latin America;

The Urban Challenge in Africa: Growth and Management of its Large Cities;

Women and Kinship: Comparative Perspectives on Gender in South and South-East Asia.

156. An additional 12 manuscripts are being readied for production and will be published in 1998.

157. Two recent UNU Press titles were licensed to publishers in countries where the national language is not English. One of these titles was *Amazonia*, which will now be published in Portuguese by a Brazilian company. The other was *The Impact of Chaos on Science and Society*, which will be published in Japanese. Negotiations for a Japanese edition of *Volunteers against Conflict* are still ongoing.

158. To disseminate UNU research results better within developing countries, UNU Press has been promoting the reprint of its books by third world publishers. During 1997, less expensive reprint editions of three UNU Press titles were published: *Emerging World Cities*, *Women and Kinship* and *Nepal*.

159. The UNU Press sales and marketing efforts during the year included participating in three international book fairs, in Frankfurt, London and Tokyo. UNU Press books were also promoted at book exhibitions in Denmark, Japan, Switzerland, the United States and Zimbabwe.

160. During 1997, UNU became a member of the Humanity CD-ROM Project, based in Belgium, which is scanning books on to CD-ROMs and distributing the CD-ROMs either free or at low cost to developing countries. So far, all the UNU food and nutrition publications have been scanned, and the scanning of the University's books on sustainable development is almost complete.

161. Joining this project benefits UNU in two important ways. First, more and more people will now have access to the University's work, without UNU having to pay the high-priced shipping costs of getting it to them. Second, the high-tech equipment used to copy the books can also provide the University with scanned versions of its own publications, which are being uploaded directly on to the UNU home page.

162. The University was involved with the publication of several journals during the year:

Food and Nutrition Bulletin;

Journal of Food Composition and Analysis;

Global Environmental Change – Human and Policy Dimensions;

Mountain Research and Development.

163. The UNU Centre printed three additional information documents in 1997: three issues of the University's newsletter *Nexions*; a compilation of all of the University's environmental research entitled *Five Years after Rio: UNU's Responses to Agenda 21*, for the special session of the General Assembly relating to the environment, held in June; and a new catalogue of UNU Press publications.

164. The University's research and training centres and programmes also produced a substantial amount of print material during 1997.

165. More than 1,000 copies of UNU/WIDER publications were sold through direct sale. Another 2,200 copies of the Institute's *World Development Studies* (Nos. 1-11) were sold to United Nations Publications in New York. Almost 1,000 copies of UNU/WIDER publications were distributed free of charge to developing countries and the media. The

Institute also distributed 14,000 copies of its biannual newsletter *Wider Angle*.

166. Two publications resulting from the UNU/WIDER project on the Wave of Emergencies of the Last Decade have been especially popular. A large number of copies of the publication it produced on Rwanda was purchased by the Department of Humanitarian Affairs of the United Nations Secretariat. The publication on Zaire was distributed to all the members of the Security Council.

167. UNU/INTECH has disseminated its research output through workshops, seminars and lecture series, and through the circulation of its publications. The target audience is the academic community, policy makers and non-governmental organizations concerned with the rights of women workers. An example of such dissemination is in the links that have developed with the National Science Foundation in the United States, the Hong Kong University of Science and Technology, the National Centre for Software Technology of India and the Hong Kong-based Committee for Asian Women.

168. UNU/IAS has made dissemination a high priority, especially in new media forms that target specific audiences. The UNU/IAS working paper series presents the preliminary findings of the Institute's ongoing research – that being done by both senior researchers and Ph.D. fellows. The Institute also uses electronic conferencing and workshops to reach out to Internet audiences. The cornerstone of UNU/IAS dissemination continues however to be its home page, which keeps up-to-date information on the Institute's activities and research. The UNU/IAS seminar series and Brown Bag Lunch series are also used to disseminate information. During 1997, more than 100 lectures and seminars were held as part of these two series, all of them open to the public.

169. UNU/IIST is providing 50 developing country institutions with technical reports, information on international software literature and free software. These reports are produced by UNU/IIST and its partner institutions. Developing countries will be able to use this information to keep up to date on the latest developments in software technology.

170. UNU held and contributed to five informative events in New York during 1997 that were open to the general public:

The New Globalism and Developing Countries, in May;

The Sustainable Management of Renewable Natural Resources, in June;

What Kind of Finance Conference Would the World Need?, in October;

Building Strategies for Public Policies in a Globalizing Environment, in October;

Financial and Development Issues in Emerging Markets, in November.

Chapter V
Interface with the United Nations system

171. The University continued to interact with other United Nations organizations during 1997. The following section highlights this collaboration.

Subcommittee on Nutrition of the Administrative Committee on Coordination

172. The UNU plays an active part in the Subcommittee on Nutrition of the Administrative Committee on Coordination.

Subcommittee on Water Resources of the Administrative Committee on Coordination

173. UNU/INWEH plays an active role in this subcommittee on behalf of UNU.

Commission on Science and Technology for Development

174. UNU/INTECH supported the activities of the Commission by participating in meetings and by making available all of the documentation and information it had produced and commissioned for its information technology workplace. UNU/INTECH advised the Commission on gender issues in information technology and a staff member acted as the Chair of the Gender Advisory Board.

Intergovernmental Panel on Climate Change

175. UNU/IAS and the Intergovernmental Panel on Climate Change held a joint conference on incorporating Integrated Assessment Models into climate change models.

Department of Humanitarian Affairs

176. UNU and the secretariat of the International Decade for Natural Disaster Reduction are cooperating closely on the UNU project on Natural Disaster Risk Management.

Department of Peacekeeping Operations

177. UNU and the Department of Peacekeeping Operations are developing jointly the UNU project on the Foundations of Peace.

Executive Committee on Economic and Social Affairs

178. UNU/WIDER was asked to review the reports of the Executive Committee and determine a process that could be used to reduce reporting overlaps. The reports that UNU/WIDER is reviewing are *The World Economic and Social Survey*; the *Trade and Development Report* prepared by UNCTAD; the *World Investment Report*; the *Least Developed Countries Report*; the *Human Development Report* of UNDP; and the regional economic surveys.

United Nations Children's Fund

179. The United Nations Children's Fund (UNICEF) is providing a research contribution to the UNU/WIDER project on New Models of Provision and Financing of Public Goods. UNICEF and WHO are active partners in the UNU project on Overcoming Critical Micronutrient Deficiencies.

United Nations Conference on Trade and Development

180. A UNU/INTECH staff member helped UNCTAD with its 1997 *World Investment Report*. UNU/WIDER held a press conference in September on the occasion of the launch of the *Least Developed Countries 1997 Report*. UNCTAD is providing three research contributions to the UNU/WIDER project on Growth, External Sector and the Role of Non-traditional Exports in Sub-Saharan Africa.

United Nations Development Programme

181. UNU/INTECH and UNDP are working together on a project dealing with teleworking.

182. A UNU/IAS staff member has been asked to be an adviser on the UNDP *Human Development Report*. UNDP made a $5,000 contribution towards the UNU/IAS Multilateral Diplomacy workshop, which was held in Brazil.

183. UNDP co-financed one of the UNU/INRA African mineral-related workshops.

184. The Director of UNU/WIDER has given several presentations on the Institute's work to those working at UNDP. UNU/WIDER received $56,000 from UNDP in support of the research of its project on Poverty and Well-being in Asia during the Transition and the related meeting. UNU/WIDER is contributing to the UNDP review paper on Poverty and Distribution during the Transition; and several UNDP staff are contributing to the UNU/WIDER project on the Wave of Emergencies of the Last Decade.

185. The Chief of the Regional Programme and Policy Division of the Regional Bureau for Asia and the Pacific of UNDP delivered a public lecture on development aid at UNU/WIDER in April. UNU/WIDER helped UNDP launch the *Human Development Report 1997* in Finland with a pre-launch seminar organized jointly by the UNDP Nordic Information Office and UNU/WIDER in June in Helsinki.

186. UNU received $95,000 from UNDP to continue implementing its project on Asia and Africa in the Global Economy.

United Nations Development Fund for Women

187. The United Nations Development Fund for Women (UNIFEM) invited UNU/INTECH to initiate collaborative research on globalization, technological change and women's work in sub-Saharan Africa. UNIFEM is also collaborating with UNU/INTECH on writing a policy paper on gender issues for the International Telecommunication Union for its 1998 World Telecommunications and Development Conference.

United Nations Environment Programme

188. UNU and UNEP cooperation led to the successful bid for inclusion of UNU/PLEC into the GEF portfolio. The Facility pledged $6.17 million towards the project, which will be executed with UNEP as the GEF partner.

Economic Commission for Latin America and the Caribbean

189. UNU/INTECH and the Economic Commission for Latin America and the Caribbean (ECLAC) have been cooperating in the identification of new research areas and UNU/INTECH staff have been involved in collaborative work with ECLAC. ECLAC is also providing a research contribution to the UNU/WIDER project Short-term Capital Movements and Balance of Payments Crises.

International Labour Organization

190. A UNU/INTECH paper was included in an International Labour Organization (ILO) publication. ILO is also providing a research contribution to the UNU/WIDER project on Short-term Capital Movements and Balance of Payments Crises.

Food and Agriculture Organization of the United Nations

191. UNU cooperates with FAO in the follow-up process to chapter 13 of Agenda 21, on managing fragile ecosystems: sustainable mountain development. In this context, a major contribution was made to the special session of the General Assembly that was held in June. FAO is providing a research contribution to the UNU/WIDER project on Land Distribution, Land Reform and Economic Growth. FAO is also actively participating in the UNU INFOODS project.

United Nations Educational, Scientific and Cultural Organization

192. UNU and UNESCO, together with the Association of Universities of Asia and the Pacific, organized the National Strategies and Regional Cooperation for the Twenty-first Century conference (the Asia-Pacific regional conference leading to the 1998 World Congress on Higher Education), which was held at UNU headquarters in July.

193. UNESCO and UNU, together with the Third World Academy of Sciences, promote the South-South Cooperation Programme on Environmentally Sound Socio-Economic Development in the Humid Tropics, within which a workshop was organized in December in Yunnan Province, China. The UNU input to the workshop was primarily given through PLEC.

194. The International Centre for Theoretical Physics, under the auspices of UNESCO, is working with UNU on its project on Microprocessors and Informatics.

195. UNU and UNESCO signed an agreement establishing a UNESCO/UNU-ILA chair in leadership studies; and UNU/IAS and UNESCO signed an agreement establishing a UNESCO/UNU-IAS chair on the global economy.

196. UNU and the Government of Namibia began work on the concept and practice of zero emissions in Africa under the UNU/UNESCO agreement to set up a chair that was signed in 1996.

197. UNU and Beijing University continued work under the UNU/UNESCO chair in plant biotechnology.

World Bank

198. The Director of UNU/INTECH delivered a talk at the Information for Development (INFODEV) group conference of the World Bank. The Deputy Director of UNU/INTECH was invited to make a presentation at the Global Knowledge Conference, which was held in Ottawa in June. A UNU/INTECH staff member made a presentation of the findings of the Institute's research on foreign direct investment and technology transfer at the Bank's Development Prospects Group in October.

199. The World Bank has requested a UNU/INTECH researcher to provide papers for the *1998 World Development Report*. The World Bank and IMF are providing research contributions to the UNU/WIDER project on Short-term Capital Movements and Balance of Payment Crises.

International Atomic Energy Agency

200. The International Atomic Energy Agency contributed funds to the UNU Brucellosis Research Network for the development of better diagnostic methods and is involved with the University's metabolic studies on nutrition and infection.

Chapter VI
State of the University, 1997

New Rector appointed

201. The Secretary-General appointed Hans van Ginkel as the fourth Rector of the United Nations University. The decision was announced in March following discussions between the Secretary-General and the Director-General of UNESCO. Mr. van Ginkel, who is a citizen of the Netherlands, had previously been Rector Magnificus at the University of Utrecht and had been a UNU Council member since 1992. He took over from Heitor Gurgulino de Souza on 1 September 1997.

Search launched for new Vice-Rectors

202. Takashi Inoguchi completed his term as Senior Vice-Rector in April. The search for two new vice-rectors was initiated in the summer. The positions were advertised in several international publications, such as *The Economist*, the *Chronicle of Higher Education* and *Le Monde Diplomatique*. Interviews with the short-listed candidates were held in November. The new vice-rectors are expected to take office in early 1998.

New Director at UNU/IIST appointed

203. Zhou Chaochen was appointed as the new Director of UNU/IIST in July. Professor Zhou took over in August from Dines Bjørner, who completed his term as Director shortly before. Professor Zhou had been the Institute's Principal Research Fellow for five years.

Forty-fourth session of the Council

204. The Council of the University, its governing body, held its forty-fourth session in Tokyo from 1 to 5 December 1997. The major item of discussion at the session was the Rector's assessment of what UNU does and does not do well. After presenting his assessment, the Rector suggested to Council members that a university-wide strategic plan be formulated to determine what UNU is meant to be doing and to find ways of doing those things better. Such a plan would help the University determine how it should best proceed in the future.

205. Three other important items of business were discussed by the Council. One was the 20-year external peer evaluation of UNU planned for 1998 to assess the extent to which the University has fulfilled the objectives set out in its charter over the 11-year period from 1987 to 1997. The second was the review being done by the Joint Inspection Unit, the results of which will be submitted to the General Assembly in September. Both evaluations are meant to strengthen the University's performance and help determine the best way for it to evolve. The third major item was the adoption of the biennial budget and academic programme for the period 1998-1999.

Evaluation

206. A review and evaluation of the first five year of operation of UNU/IIST was completed during the year. A report prepared by an international evaluation team discussed the Institute's progress in fulfilling its mandate and made suggestions on how the Institute could improve its future research, training and dissemination work. The report, together with the comments of the Rector, the Board and the new Director of UNU/IIST, was submitted to the Council in December.

New agreements

207. The University entered into the following agreements during 1997:

(a) In January, a memorandum of understanding between UNU and the National Food Research Institute of Japan was extended for an additional three years. NFRI has been an associated institution since 1983. It trains UNU fellows from developing countries in food science and technology;

(b) In February, an agreement of cooperation was signed with the Council for Scientific and Industrial Research (CSIR) of the Government of Ghana to expand collaboration between UNU/INRA and CSIR on issues related to natural resources;

(c) In April, an agreement of cooperation was signed with Hitotsubashi University of Japan to collaborate in research on global issues;

(d) In June, an agreement between UNESCO and UNU/ILA was signed for the establishment of a UNESCO chair in leadership studies. The chair will promote leadership-focused research;

(e) Also in June, UNU and the Government of Iceland signed an agreement to open the UNU Fisheries Training Programme at the Marine Research Institute in Reykjavik. This programme will run every year from April to October. The students, who will come mainly from developing countries, will be required to complete a three-part hands-on curriculum, which includes 6 weeks of core theory, 12 weeks of specialized training, and 6 weeks aboard either a research vessel or a trawler. The rigorous core programme will teach students about fish policy, monitoring, processing quality management, marketing and environmental protection.

208. UNU/IIST became more involved with its host territory during the year. It signed agreements to take part in two projects that involve designing information centres in Macau.

209. The first agreement, signed in May, was between UNU/IIST, the Macau Foundation and the State Science and Technology Commission for China for a project on the Information Network Centre of Macau. This project will set up an Internet information centre to deal with topics about Macau and China. The Centre will operate on computer hardware donated by the State Science and Technology Commission and will be based at the Macau Foundation. UNU/IIST is responsible for organizing the team that will create and supervise it.

210. The second agreement, signed in June, was between UNU/IIST and the Macau Sino-Latin Foundation for the Sino-Latin Project, in which UNU/IIST will provide expertise to the Macau Sino-Latin Foundation in designing and installing an Internet information server that will bring Chinese and Latin communities around the world together over the Web. The information available on the UNU/IIST-created server will have the following aims: to create interest in Macau's art and culture; to offer language training programmes in Chinese, Portuguese and Spanish; and to promote research on Macau-China relations. The server will be located at the Sino-Latin Foundation.

Participation in international conferences

211. In July, UNU hosted a conference on National Strategies and Regional Cooperation for the Twenty-first

Century, a joint effort of UNU, UNESCO, the Japanese Ministry of Education, Science, Sports and Culture, and the Association of Universities of Asia and the Pacific. The conference's main aim was to strengthen academic cooperation and improve university education in the region. Similar events were held in Africa, the Middle East, Latin America and the Caribbean, and Europe. The recommendations adopted at those regional meetings are to be discussed in Paris at the UNESCO World Conference on Higher Education in 1998.

212. The most important outcome of the conference was a declaration produced and agreed to by the Asian and Pacific countries that are members of UNESCO. The declaration outlines what the countries want their universities to accomplish in the future and how they should go about achieving it. The declaration includes an action plan, divided into four main areas: relevance, quality, management and finance, and cooperation.

Finance

213. As at 31 December 1997, pledges to the Endowment Fund, operating and specific programme contributions made by 54 Governments and 136 other benefactors totalled some $346.1 million, of which $315.6 million had been received. The University also benefited during the year from counterpart and other support, including cost-sharing support for the fellowships and other activities. The table provides a summary of the contributions of $100,000 and higher received during 1997.

Contributions received in 1997
(United States dollars)

Source	*Purpose*	*Amount paid*
Governments		
Austria	Endowment Fund	119 304
Canada	Operating contribution for UNU/INWEH	510 928
Japan	Operating contribution for the UNU/Centre and UNU/IAS and specific programme contributions for UNU/Centre	16 963 388
Jordan	Operating contribution for UNU/ILA	500 000
Netherlands	Operating and specific programme contributions for UNU/INTECH	1 001 875
Sweden	Specific programme contribution for UNU/WIDER	154 824
	Subtotal	**19 250 319**
Non-governmental agencies and private sector		
ASCII Corporation (Japan)	Specific programme contribution for UNU/IAS	1 283 886
Ebara Corporation (Japan)	Specific programme contribution for UNU/IAS	101 207
European Commission	Specific programme contribution for UNU/INTECH	364 142
Ishikawa Foundation for International Exchange (Japan)	Specific programme contribution for UNU/IAS	144 263
Shimadzu Corporation (Japan)	Specific programme contribution for UNU/Centre	238 780
UNDP Malaysia	Specific programme contribution for UNU/INTECH	118 300
	Subtotal	**2 250 578**
	Total	**21 500 897**

Annex I

Members of the Council of the United Nations University, 1997

Appointed members

José Joaquin **Brunner Ried** (Chile) (Chairman of the Council), Minist · Ministry of the Secretary-General, Government of Chile

Paolo **Costa** (Italy), Minister of Public Works, Government of Italy

Donald **Ekong** (Nigeria), Scholar-in-Residence, The Ford Foundation, Johannesburg, South Africa

Salim **El-Hoss** (Lebanon), American University of Beirut and former Prime Minister of Lebanon

J. A. **van Ginkel** (Netherlands), Rector Magnificus and Professor of Human Geography, Utrecht University (UNU Rector from 1 September 1997)

Genady Nikolaevich **Golubev** (Russian Federation), Head, Department of World Physical Geography and Geoecology, Faculty of Geography, Moscow State University

Françoise **Héritier-Augé** (France), Director, Laboratoire d'anthropologie sociale, École des Hautes Études en Sciences Sociales, Collège de France

Risto **Ihamuotila** (Finland), Chancellor, University of Helsinki

Hideo **Kagami** (Japan), former Permanent Representative of Japan to the United Nations

Hanaa **Kheir-el-Din** (Egypt), Professor of Economics and Chairperson of the Economics Department, Faculty of Economics and Political Science, Cairo University

Sang Soo **Lee** (Republic of Korea), Professor Emeritus, Korea Advanced Institute of Science and Technology

Madina **Ly-Tall** (Mali), Ambassador Extraordinary and Plenipotentiary of the Republic of Mali to France, Paris

Edson **Machado de Sousa** (Brazil), Head, Minister of Education Cabinet, Ministry of Education and Sports, Government of Brazil

Graça **Machel** (Mozambique), President, Foundation for Community Development, Mozambique

Valeria **Merino-Dirani** (Ecuador), Executive Director, Corporación Latinoamericana para el Desarrollo, Ecuador

Lucien F. **Michaud**, S. J. (Canada), Professor, University of Sudbury, Canada

A. P. **Mitra** (India), President, National Academy of Sciences; Bhatnagar Fellow (Council of Scientific and Industrial Research); National Physical Laboratory, India

Ingrid **Moses** (Australia), Vice-Chancellor, University of New England, Armidale, Australia (elected Chair of the Council at the forty-fourth session)

Jacob L. **Ngu** (Cameroon), Director, Immunology and Biotechnology Laboratories, Cameroon

Luis Manuel **Peñalver** (Venezuela), Presidential Commission, Centenario del Natalicio de Andrés Eloy Blanco, Fundación La Casa de Bello, Venezuela

Victor **Rabinowitch** (United States of America), Senior Vice-President, MacArthur Foundation, United States

Frances **Stewart** (United Kingdom of Great Britain and Northern Ireland), Director, Queen Elizabeth House, University of Oxford

Wang Shaoqi (China), Director-General, International Cooperation Department, State Science and Technology Commission, China

Rector

Heitor **Gurgulino de Souza** (Brazil) (until 31 August 1997)

Hans **van Ginkel** (the Netherlands) (from 1 September 1997)

Ex-officio members

Kofi **Annan** (Ghana), Secretary-General, United Nations

Federico **Mayor** (Spain), Director-General, United Nations Educational, Scientific and Cultural Organization, Paris

Marcel **Boisard** (Switzerland), Executive Director, United Nations Institute for Training and Research, Geneva

Annex II

Titles published in 1997

United Nations University Press

China in the Twenty-first Century: Politics, Economy and Society, edited by Fumio Itoh, UNU Press

Environment, Energy and Economy: Strategies for Sustainability, edited by Yoichi Kaya and Keiichi Yokobori

Freshwater Resources in Arid Lands, edited by Juha Uitto and Jutta Schneider, UNU Press

The Impact of Chaos on Science and Society, edited by Celso Grebogi and James Yorke, UNU Press

A New Europe in the Changing Global System, edited by Richard Falk and Tamás Szentes, UNU Press

The New Globalism and Developing Countries, edited by John Dunning and Khalil Hamdani, UNU Press

Regional Mechanisms and International Security in Latin America, edited by Olga Pellicer, UNU Press

The Urban Challenge in Africa: Growth and Management of Its Large Cities, edited by Carole Rakodi, UNU Press

Women and Kinship: Comparative Perspectives on Gender in South and South-East Asia, by Leela Dube, UNU Press

Other publications

UNU/WIDER

World Development Studies Series

Regionalization in East Asia-Pacific? An Elusive Process, by Joakim Öjendal

Research for Action Series

Community and Village-based Provision of Key Social Services: A Case Study of Tanzania, by Marja Liisa Swantz

The Determinants of Economic Performance in Transitional Economies: the Roles of Ownership, Incentives and Restructuring, by Derek C. Jones

Développement, aide, et conflit: Réflections á partir du cas du Rwanda, by Peter Uvin

Emergence of Unorthodox Ownership and Governance Structures in East Asia: An Alternative Transition Path, by Laixiang Sun

Food Marketing Reconsidered: An Assessment of the Liberalization of Food Marketing in Sub-Saharan Africa, by Pekka Seppälä

The Liberalization of Foreign Exchange Markets and Economic Growth in Sub-Saharan Africa, by Nguyuru H. I. Lipumba

The Polish Alternative: Old Myths, Hard Facts and New Strategies in the Successful Transformation of the Polish Economy, by Grzegorz Kolodko and D. Mario Nuti

Political Sources of Humanitarian Emergencies, by K. J. Holsti

The Role of Civic Organizations in the Provision of Social Services: Towards Synergy, by Mark Robinson and Gordon White

Towards the Abyss? The Political Economy of Emergency in Haiti, by Mats Lundahl

The Transition's Mortality Crisis in East Germany, by Regina T. Riphahn and Klaus F. Zimmermann

Tree Plantations in the Philippines and Thailand: Economic, Social and Environmental Evaluation, by Anssi Niskanen and Olli Saastamoinen

Why Humanitarian Emergencies Occur: Insights from the Interface of State, Democracy and Civil Society, by Claude Ake

Zaire after Mobutu: A Case of Humanitarian Emergency, by Kisangani N. F. Emizet

Working papers

Causes and Lessons of the Mexican Peso Crisis, by Stephany Griffth-Jones

Decentralizing and the Provision and Financing of Social Services: Concepts and Issues, by Cecilia Ugaz

Economic Shocks, Impoverishment and Poverty-related Mortality during the Eastern European Transition, by Renato Paniccià

Evolution of the Women's Movement in Contemporary Algeria: Organization, Objectives and Prospects, by Cherifa Bouatta

Gender Aspects of Urban Economic Growth and Development, by Sylvia Chant

Health Status and Health Policy in Sub-Saharan Africa: A Long-term Perspective, by Giovanni Andrea Cornia and Germano Mwabu

Humanitarian Emergencies and Warlord Economies in Liberia and Sierra Leone, by William Reno

Income Distribution during the Transition in China, by Zhang Ping

Long-term Growth and Welfare in Transnational Economies: The Impact of Demographic, Investment and Social Policy Changes, by Giovanni Andrea Cornia, Juha Honkkila, Renato Paniccià and Vladimir Popov

The Political Economy of Complex Humanitarian Emergencies: Lessons from El Salvador, by Manuel Pastor and James K. Boyce

Privatization, Asset Distribution and Equity in Transitional Economies, by Juha Honkkila

The Process of Economic Change, by Douglas C. North

Promoting Education within the Context of a Neo-Patrimonial State: The Case of Nigeria, by Daniel Edevbaro

The Rise and Fall of Development Aid, by Stephen Browne

The Road to the Market in North Korea: Projects, Problems and Prospects, by Keun Lee

The Scale and Nature of International Donor Assistance to Housing, Basic Services, and Other Human-Settlements Related Projects, by David Satterthwaite

Sustainable and Excessive Current Account Deficits, by Helmut Reisen

User Charges for Health Care: A Review of the Underlying Theory and Assumptions, by Germano Mwabu

User Fees, Expenditure Restructuring and Voucher Systems in Education, by Simon Appleton

Uzbekistan: Welfare Impact of Slow Transition, by Richard Pomfret and Kathryn H. Anderson

Viet Nam: Transition as a Socialist Project in East Asia, by Manuel F. Montes

War, Hunger and Displacement: An Econometric Investigation into the Sources of Humanitarian Emergencies, by E. Wayne Nafziger and Juha Auvinen

Annual lectures

"The Contribution of the New Institutional Economics to an Understanding of the Transition Problem", by Douglas C. North

Books published by commercial publishers

Commodity Supply Management by Producing Countries: A Case Study of Tropical Beverage Crops, by Alfred Maizels, Robert Bacon and George Mavrotas, Clarendon Press, Oxford

The Environment and Emerging Development Issues, Volumes 1 and 2, edited by Partha Dasgupta and Karl-Göran Mäler, Clarendon Press, Oxford

The European Rupture: The Defence Sector in Transition, edited by Mary Kaldor and Geneviève Schméder, Edward Elgar and UNU Press

Indian Development: Selected Regional Perspectives, edited by Jean Drèze and Amartya Sen, Clarendon Press, Oxford

National Environmental Policies: A Comparative Study of Capacity-Building: With a Data Appendix: International Profiles of Changes since 1970, edited by Martin Jänicke, Helmut Weidner and Helge Jörgens, Springer Verlag

Restructuring the Global Military Sector: New Wars, edited by Mary Kaldor and Basker Vashee, Pinter

UNU/IAS

Working paper series

A Comparative Study on Environmental Policy Development Processes in Three East Asian Countries: Japan, Korea and China, by Yohei Harashima and Tsuneyuki Morita

Differential Productivity of Foreign and Domestic Capital, Foreign Capital Penetration, Socio-Political Environments and Economic Growth: A Re-examination of Capital Dependency, by Indra De Soysa

Economic Growth and Environmental Sustainability: Concepts and Issues with Relevance for China, by Mohan Munasinghe

Energy and Environmental Conflict: The Case of the Ogoni Crisis, Nigeria, by Abubakar Huhu-Koko

Environmentalism in Periods of Rapid Societal Transformation: Legacy of the Industrial Revolution

in the United Kingdom and the Meiji Restoration in Japan, by Brendan Barrett

Globalization and Mega-city Development in Pacific Asia: A Report of the 1996 UNU-UNESCO Workshop, by Jacob Park

Informal Recycling and Collection of Solid Wastes in Developing Countries: Issues and Opportunities, by Martin Medina

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Regional Disparity in China 1985-1994: Effects of Globalization and Economic Liberalization, by Dapeng Hu and Masahisa Fujita

Regionalism in the Post-Cambodian Conflict: The ASEANization Process and Prospects for "One South-East Asia", by A. K. P. Mochtan

Why Everybody Loves Flipper: A Political Economic Analysis of the US Dolphin Safe Legislation, by Achim Körber

Books published by outside publishers

Caring and Sharing Environmental Resources, by Jyoti Parikh, Indira Gandhi Institute of Development Research

Household Lifestyles: The Social Dimension of Structural Economics, by Faye Duchin, Island Press

UNU/INTECH

Discussion papers

No. 9701 "China's National Innovation System Approach to Participating in Information Technology: The Innovative Recombination of Technological Capability", by Shulin Gu and Edward Steinmueller, May 1997

No. 9702 "Technology Generation and Technology Transfers in the World Economy: Recent Trends and Implications for Developing Countries", by Nagesh Kumar, June 1997

No. 9703 "Technology Acquisition, De-regulation and Competitiveness: A Study of the Indian Automobile Industry", by Krishnan Narayanan, September 1997

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No. 9706 "Technology Trends in Pollution-intensive Industries: A Review of Sectoral Trends", by Anthony Bartzokas and Masaru Yarime, December 1997

No. 9707 "Inter-firm Technological Cooperation Effects of Absorptive Capacity, Firm-Size and Specialization", by Frederico Rocha, December 1997

Books published by commercial publishers

Technology, Market Structure and Internationalization: Issues and Policies for Developing Countries, by Nagesh Kumar and N. S. Siddharthan, Routledge and UNU Press

UNU/INRA

Field Survey of Mineral Resources in Zambia and Issues Associated with Their Management and Sustainable Development, by S. Simukanga, S. H. Mambwe and J. H. Phiri

Field Survey of Water Resources, Their Conservation, Management and Utilization for Sustainable Development in Anambra and Benue States of Nigeria, by F. O. R. Akamigbo

Indigenous African Food Crop Preparations as Compared to Those of Introduced Foods Produced in Africa and Imported Foods: Southwestern Nigeria, by S. H. Abiose and T. O. Omobuwajo

UNU/IIST

Technical reports and notes

Checking Hybrid Automata for Linear Duration Invariants, by Li Xuan Dong, Dang Van Hung and Zheng Tao

Checking a Regular Class of Duration Calculus Models for Linear Duration Invariants, by Pham Hong Thai and Dang Van Hung

A Combination of Interval Logic and Linear Temporal Logic, by Qiu Zongyan and Zhou Chaochen

Combining and Distributing the Financial Information System, by Do Tien Dung and Chris George

Compositional Reasoning of Concurrency Using Assumption-Commitment Paradigm, by Xu Qiwen and Mohalik Swarup

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Duration Calculus with Weakly Monotonic Time, by Paritosh K. Pandya and Dang Van Hung

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Formal Model for Competing Enterprises, Applied to Marketing Decision-making, by Tomasz Janowski and Rumel V. Atienza

Knowledge-Based Systems: Formalisation and Applications to Insurance, by Souleymane Koussoubé

Metropolitan In-street On-route Passenger Transport: Monitoring and Control, by Gueorgui Satchok

Modelling and Verification of Biphase Mark Protocols in Duration Calculus Using PVS/DC, by Dang Van Hung

MultiScript I: The Basic Model of Multilingual Documents, by Myatav Erdenechimeg, Richard Moore and Yumbayar Namsrai

MultiScript II: Displaying and Printing Multilingual Documents, by Yumbayar Namsrai and Richard Moore

MultiScript III: Creating and Editing Multilingual Documents, by Myatav Erdenechimeg and Richard Moore

Neighbourhood Logic and Interval Algebra, by Arun K. Pujari

Neighbourhood Logics: NL and NL2, by Rana Barua and Zhou Chaochen

Notes on Neighbourhood Logic, by Suman Roy and Zhou Chaochen

On the Use of Control Symbols in the Mongolian Script Encoding, by Yumbayar Namsrai, Richard Moore and Myatav Erdenechimeg

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Semantics and Logic for Provable Fault-Tolerance, a Tutorial, by Tomasz Janowski

Specification-based Testing, by Marisa Sanchez

Specification of a Switching Communications System, by Hoang Thi Tung Lam and Richard Moore

Timed Frame Models for Discrete Time Process Algebras, by J. Bergstra, C. A. Middelburg and B. Warinschi

Towards an Integrated CORBA/RAISE Semantic Interoperable Environment, by Vladimir Zadorozhny

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